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SEPTEMBER 4, 1907.

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Bidding on Insufficient Knowledge

OUR editorial of last week, referring to the unscientific bidding of many contractors, was hardly in the printers' hands before the news came that one of the bidders on the Ashokan dam, the John Pierce Co., had offered to do the work for \$10,315,350, which was \$2,354,405 below the next lowest bidder, and about \$2,185,000 below the engineers' estimate; and that the Board of Water Supply, after conferring with Mr. Pierce, awarded the contract to the next bidder, the MacArthur Bros. Company and Winston & Co., bidding jointly; believing that the Pierce Company lacked "the knowledge, experience and such margin for profit as will secure willingness and ability to continue the work to its conclusion with essential speed." The low bidders admitted that their bid was based upon insufficient knowledge of and experience in

excavation and embankment costs. Their bids for the three classes of embankment were 42 cents, 37½ cents, and 35 cents, respectively, as against 60, 60 and 35 cents of the MacArthur Bros. Company, and for excavation 30 cents as against 68 cents.

The New York Board of Aldermen have appointed a committee to investigate the awarding of this contract to other than the lowest bidder; but most engineers of experience will appreciate the endless litigation and delay so often resulting from accepting bids indubitably too low, and approve this award.

Street Pavement Imperfections

GEORGE W. TILLSON, who was for a number of years engineer of the Highway Department of Brooklyn, was recently transferred to the head of the similar department in Manhattan, and shortly thereafter stated, in a discussion before the American Society of Civil Engineers, that "the perfect pavement has never been constructed," going on to suggest that the paving conditions of cities have not been kept up as fully to the requirements as have other municipal utilities. We would not wish to discourage in any professional man that appreciation of the fact that perfection has not yet been reached which is necessary for progress; but we believe that Mr. Tillson is unduly modest for himself and for paving engineers generally. It certainly cannot, for instance, be claimed that the street cleaning and refuse disposal of our city is in any more ideal a condition than is the street paving, and we believe that any candid expert in almost any line of municipal work will confess similar shortcomings in his special department also. As a matter of fact, cities and especially American cities—have been growing so fast, both in size and in the volume, heaviness and variety of their traffic, that methods for meeting the conditions have not kept pace with it; and when we consider that the same is true of our highly organized transcontinental railways, this backwardness is certainly not a subject for extreme humility. We do not mean that no effort should be made to improve present conditions; in fact, if the past rate of improvement is not continued, or even increased, conditions with reference to the maintenance and construction of many of our city utilities will become well nigh intolerable. Our own impression is that there are two chief causes for the unsatisfactory condition of pavements in many cities, one being the continual tearing up of the pavements for laying and repairing underground structures, each of which crimes against the public does more damage than several years of legitimate wear; and the other, the failure of councils and others to wisely spend sufficient money upon the construction and repair of pavements subject to a traffic which has increased many fold in both weight and volume within the last few years. Many pavements designed for ordinary traffic rapidly go to pieces when heavy hauling is done over them, for which the blame should not be attached to the pavement, nor possibly to anyone responsible for it, and the only satisfactory remedy is to replace it with one better adapted to the existing conditions. The suggestion that for such heavy hauling granite blocks be used, but

that additional money be spent upon them to have them dressed so as to give a smoother surface and closer joints is, we believe, one worthy of favorable consideration. Sandstone blocks, such as are used in Rochester and several other cities, also offer a practicable solution of this difficulty. If our city authorities will realize the increasing difficulty of the problem, and make up their minds to meet it by sufficient appropriations to be expended under expert advice rather than by blaming contractors for the failure of pavements of kinds unsuited to the requirements, we believe greater progress will be made. Present exacting conditions can be adequately met only by expenditures much greater than those which sufficed a few years ago.

MUNICIPAL USE OF PATENTED ARTICLES

Consideration of Present Status of Supreme Court Decisions and Legislative Enactments Affecting Patented Articles for Public Improvements

By JAMES M. HEAD,
General Counsel for Warren Brothers Company

[NOTE.—This is written as a reply to the article by Edgar H. Boles, of the Philadelphia bar, in the July 31 issue of the MUNICIPAL JOURNAL AND ENGINEER. Warren Brothers' Company are owners of the bitulithic pavement patents, which have been the subject of many of the legal decisions discussed in these articles. With this reply we must consider this discussion closed, both sides having been given a hearing. We believe, however, that the importance of the subject to many cities warrants our having devoted to it the space which we have.]

THE review made by Mr. John Simpson in the issue of the MUNICIPAL JOURNAL AND ENGINEER for May 29, 1907, of the apparently conflicting decisions of the different courts upon this important subject, was so manifestly intended to be a fair résumé of the important points passed upon by the several courts that I am surprised that Mr. Boles, the former attorney of the Barber Asphalt Paving Company, should have made the statements he did concerning the status of the law upon this subject.

The difference between a legal monopoly, protected by a patent, or, as the Supreme Court of the United States has said, "a franchise granted by the express authority of the United States Constitution," and an illegal monopoly, created by the act of the city authorities, attempting to give to one bidder an undue advantage over another, was not referred to by Mr. Boles. Yet to all thoughtful minds the distinction is too apparent to require comment, and I venture the assertion that Mr. Boles has yet to find a single court of any standing that has placed itself on record as sustaining the broad position for which he contends—that because an article is patented it cannot be purchased by a city where competitive bidding is required in the letting of contracts.

Suppose the Legislature of a State should pass an act expressly providing that no city in that State should purchase or use any patented article, would not the law hold such an act to be unconstitutional? If, then, the express act of the Legislature of a State, prohibiting the use or purchase of patented articles by the cities of that State, would, to say the least, be of doubtful validity, what must

be the legal status of the decisions of those courts referred to by him, which have attempted to do by indirection and by judicial interpretation that which the Legislature of a State clearly could not do without setting aside an express provision of the United States Constitution?

Mr. Boles's article not only loses sight of the fact that there are two kinds of competition, but that the term "competitive bidding" is, itself, a relative term, and is liable to be given a different construction by different courts, and that it is this confusion in the minds of the courts as to what is really means by "competitive bidding" which has given rise to the apparently conflicting decisions upon this subject.

There may be competition between different things answering the same general purpose, as between macadam, asphalt, brick, wood blocks and bitulithic, for paving a given street, and that character of competition may be disposed of either before or after receiving bids on the proposed improvement. Also there may be competition between different contractors offering to lay the same kind of pavement.

As to just how much and which kind of competition the charters of the several cities and the laws of the different States require is necessarily open to a wide difference of opinion, and it is because of this that the apparent conflict in the decisions of the different courts has arisen.

In view of these manifest facts, however, it is difficult to conceive how anyone could be led into making the statement that: "It is important in laying down the rule that a statute requiring competitive bidding admits competition *in every part of the work, and if one part* is withdrawn from competition the specifications will not support a valid contract." (The italics are ours.) If that statement is to be taken seriously, then there has not been a valid contract let for a street improvement in the United States during the past ten years where competitive bidding is required. Labor unions fix the price of labor; teamsters' unions fix the price of teams; the Inter-state Commerce Commission and the several State Railroad Commissions fix freight rates, and a United States Judge has recently imposed what is generally considered a heavy penalty for their violation. The Asphalt Trust controls the price of asphalt; the Brick Trust, coupled with a fixed freight rate, controls the price of brick; the owner of a given sand bank, favorably located, fixes the price of sand, and so we may proceed with the entire list of everything going into a public improvement, and we will find at some point a fixed cost price where there is and can be no such thing as competition.

There can and always will be competition as to the percentage of profit for which different contractors are willing to undertake the construction of a public improvement, and it is, doubtless, this competition which the law has in mind when it provides that all public contracts must be let to the lowest responsible bidder.

In classing the States of Louisiana, Indiana, Illinois and Wisconsin among the States which he claims have adopted the rule against the use of patented articles, Mr. Boles neglected to refer to the very recent decision of the Supreme Court of Louisiana in the case of *Lacoste v. New*

Orleans, decided in July last, wherein this language is used:

"It would seem strange if, where the patentee releases his exclusive rights equally to all bidders, that, to the city, the patented things should be 'forbidden fruit,' no matter how available to all others, and no matter how essential to the public health, convenience or comfort, for no other reason than that it is patented. Letters patent, giving exclusive right to enjoyment for a term of years, are the reward held out by the Government for meritorious and useful invention. A patent right, while giving monopoly for a time, is not an unlawful monopoly. The value of a patent is the right of exclusive use, but when that right is waived by the patentee for a fixed price or royalty, as is the case in this suit, the thing or the process covered by the patent becomes available to all on equal terms.

"Holding these views as the result of careful study of the authorities and the facts proved, my judgment is that the plaintiff's complaint is not well founded and that the injunction is denied."

This decision was affirmed by the unanimous opinion of the Supreme Court, construing the provisions of the charter of the city of New Orleans, which requires:

"That all of the contracts of the city for an amount exceeding five hundred dollars shall be let to the lowest responsible bidder after advertising, with the right to reject any and all bids,"

the city authorities in this case having adopted plans and specifications requiring the use of the patented processes for laying the bitulithic pavement.

With reference to the Indiana decision, both the Monaghan and Seibert cases, to which Mr. Boles refers, expressly hold that patented pavements may be laid in the State of Indiana, the only question decided in those cases being whether or not the method of procedure adopted in these particular cases was in accordance with the laws of that State, and since those decisions the city of Indianapolis, and a number of other cities in that State, have adopted methods conforming to those decisions, and have awarded numerous contracts for the patented bitulithic pavement, and no attempt has been made to set them aside.

With reference to the Illinois decisions, he also ignores the fact that the Supreme Court of that State in the Siegel case, to which he refers, expressly holds that the proceedings in that case were illegal, not because the pavement proposed to be laid was patented, but because the proceedings adopted by the Council did not provide the form of competition which the laws of that State required, and that since the decision the Legislature of the State of Illinois, in proposing a new charter for the city of Chicago, adopted a clause expressly providing that:

"Any article, material or process covered by letters patent, granted by the United States Government, may be prescribed in the ordinance for the making of any proposed public improvement, or may be provided for in the specifications for any proposed public improvement, where the passage of an ordinance is not required, if prior to the passage of such ordinance or the making of such specifications the owner or owners of such patent rights shall agree in writing with the city to allow the use of such patent rights and to sell such article, material or process at a uniform stated price either to such city or to any contractor to whom such contract may be awarded for the making of such improvement."

The Allen case from Wisconsin, to which reference is made, merely decides that the method adopted by the city of Milwaukee in that case did not comply with the special provisions of the charter of Milwaukee, which expressly authorized a patented pavement to be laid, provided certain conditions were complied with. Since that decision the City Council of Milwaukee has adopted plans and specifications calling for the patented bitulithic pavement

under the provisions of its charter as defined by the Supreme Court, and will advertise for bids thereon in the near future.

In reference to the bills passed by the Legislature of the States of Ohio and Utah, these bills do not undertake to prevent cities from adopting specifications calling for bids upon patented articles, but only from adopting such specifications and calling for such bids "exclusively," which means, of course, that such plans and specifications must be adopted and bids called for on patented articles in competition with bids for other articles answering the same general purposes. In other words, in those States both kinds of competition must be provided, and the cities of Ohio, in compliance with that law, are calling for bids upon the patented bitulithic pavement in competition with other kinds of pavement answering the same general purpose, and since the passage of that law contracts have been awarded for the bitulithic pavement construction.

Mr. Boles says the general principle that "specifications calling for a patented or monopolized article violate the intent of a statute requiring competitive bidding has also been adopted throughout the State of New York, completely overruling the earlier cases." The laws of New York applicable to cities of the second class expressly provide that the City Engineer of such cities is required to prepare standard specifications for the performance of the work with different kinds of material which may be prescribed, approved and adopted by the Common Council, and that whenever the Common Council determines to make such improvement the Board of Contract and Supply must advertise for proposals for furnishing the materials, and specifications must be prepared and proposals invited for the construction thereof with each kind of paving material so prescribed, approved and adopted by the Common Council, and that after bids have been received and opened the Common Council must designate the kind of pavement or material to be used in making the particular improvement, and the contract therefore is to be awarded for the kind of pavement so designated to the lowest bidder for doing the work with that kind of pavement. This policy having been adopted by the Legislature of the State of New York, practically all of the leading cities of that State, outside of New York City, adopted specifications and advertised for bids for the patented pavement in competition with other kinds of paving materials. The bitulithic pavement has been laid during the past few years in nine of the leading cities in the State of New York, and the pavement is at this time actually being constructed in five cities in that State.

The so-called dictum of Justice Brewer, now of the Supreme Court of the United States, in the case of *Yarnold v. Lawrence*, said to "no longer represent the law of Kansas," is supported by the latest opinion of the Supreme Court of Kansas in the case of *Bunker v. City of Hutchinson*, decided at the October term, 1906, wherein the court concludes its opinion with this statement:

"There are no limitations to prevent the Mayor and Council from obtaining and applying a patented article and process in

paving a street of the city, or is there anything alleged or shown why the contract for bitulithic pavement made by the defendant should be annulled or enjoined."

It is wholly unnecessary to review at length the different cases in the several States upon this subject, since the facts, the charters of the different cities, and the laws in each State are so entirely different; but a sufficient answer to the conclusion of Mr. Boles's article, giving a list of States which he says have adopted "the rule against the closed specifications," is to state that the patented bitulithic pavement has been laid in every State mentioned by him as having adopted "the rule against closed specifications," except California and Utah, and we are now preparing to commence work in California in the very near future.

In addition to this, patented bitulithic pavement has been laid under the standard specifications for bitulithic pavement in twenty-five States, and in every Province of Canada from Alberta to Nova Scotia, including one hundred and fifty-seven different cities, having been actually constructed during the present year in the following list of States, which he says have adopted "the rule against the closed specifications," viz., Indiana, Illinois, New York, Pennsylvania, Ohio, Oregon, Kansas, Kentucky, Louisiana, and Massachusetts, and contracts are now being let in both California and Wisconsin under proceedings calling exclusively for the bitulithic pavement.

PAVEMENTS OF THE FUTURE

MR. GEO. W. TILLSON, Engineer of the Highway Department of New York City, in opening an informal discussion on pavements at the annual convention of the American Society of Civil Engineers, said: "The perfect pavement has never been constructed. The speaker has no hesitation in stating that municipal engineers in charge of pavements have failed to solve satisfactorily the problem presented to them. . . . In this statement durability is not considered, but only the public requirements. A pavement is laid primarily to sustain traffic, but, no matter how well it does this, it is not a complete success unless it can be cleaned easily and is neither slippery nor noisy. Pavements are laid for the convenience of the public, and should an engineer be fortunate enough to construct a pavement that would fill these conditions, if it were of such a character that it would wear out quickly and require constant repairs, it would be a failure. Any interruption of the traffic of a street interferes seriously with business and often causes material financial loss, so that it can be said that the perfect pavement must not only have the properties named above, but must be so durable that its necessary repairs will not obstruct traffic seriously." Mr. Tillson, in continuing his remarks, stated that engineers were partly at fault in not appreciating the peculiar conditions of each case and adapting the pavement thereto; that too often an asphalt pavement is considered simply as an asphalt pavement, a wood pavement as only a wood pavement, without any serious consideration as to just how it should be laid to meet the requirements of any particular location; that specifications are too general and that often sufficient money could be saved

on one street, where the conditions were not exacting, to provide an equally durable pavement on another street where traffic was much heavier.

The chief objection to granite blocks being noise and slipperiness, he believes that they should be better dressed so as to give a smoother pavement, and made smaller to reduce the slipperiness. Also, the better dressing will permit setting the blocks as close together as are paving brick and filling the joints with bituminous filler without gravel, which would also reduce the noise. The increasing use of automobile trucks will gradually reduce the noise on these pavements. (He does not mention the difficulty of cleaning granite block pavements, but this also would be greatly decreased by constructing the smoother surface.)

Of brick he professes little personal knowledge, but understands that noise is the greatest objection against them, and suggests that for prevention of this the filler be made of some yielding substance and the brick also bedded in the same material.

Bituminous pavements such as asphalt, he says, tax the ingenuity of the expert more than any other class of material. Such a pavement is like a carpet laid on a floor, and a failure in either is a failure in both; and he believes the foundations of asphalt pavements have too often been to blame. (He possibly had in mind the asphalt pavements in New York and Brooklyn laid upon granite blocks, which are rapidly going to pieces.) Bituminous pavements he classifies as sheet asphalt, asphalt block and bitulithic. The main objections to them are that they are slippery and will not stand heavy traffic. Referring to Mr. Clifford Richardson's recent advocacy of a pavement composed of two inches of solid binder with a 1½-inch wearing surface, laid upon a 6-inch concrete base, he endorses this, believing it would prove a success on many streets where the traffic now seems to be too heavy for sheet asphalt.

Asphalt blocks are designed for steep grades (although quite a little has been laid on perfectly flat grades), the aggregate of which the blocks are formed being coarser than in sheet asphalt; which, combined with the presence of joints, gives horses a better foothold. An especial need in connection with these is a method of testing them.

With bitulithic he had no personal experience.

"The modern wood pavement, when dry and first laid, is practically ideal. It is smooth, noiseless and is easily cleaned. It is slippery, however, in moist or frosty weather. That is its greatest fault. If this objection can be overcome it is bound to have a great future, especially if its preservative treatment is sure. It is expensive, however, and as all lumber is increasing in value from year to year, it would seem to be difficult to reduce or maintain its cost."

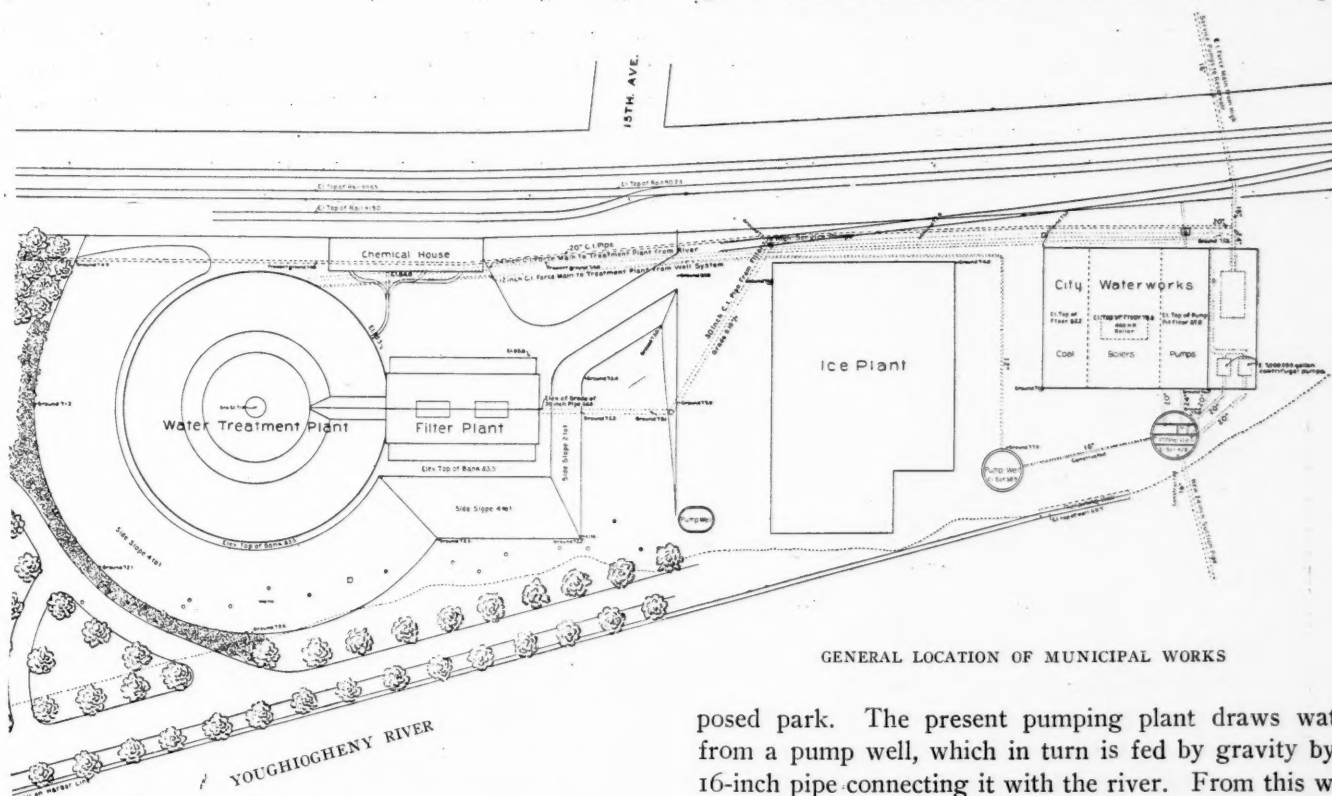
In summing up his statement, he believed that future improvements in street pavements were to be brought about not by the adoption of new materials, but by a different use of those now in vogue. He did not say, what in our opinion is fully as important, that the constant tearing up of pavements must be prevented by other methods of underground construction.

McKEESPORT'S WATER SOFTENING PLANT

Ten-Million-Gallon Municipal Plant Now Under Construction—Caustic Lime and Soda Ash Process—Provision for Carbonating—Details of Process and Construction

WHILE many railroads have installed water-softening plants for the prevention of scale in their locomotive boilers, the number of such plants for softening municipal water supplies in this country is extremely small. It, therefore, seems worth while to describe in considerable detail the plans of the largest plant of this kind yet designed for any United States city. The city of McKeesport, Pa., having a population of about 50,000, has under construction plants for both softening and filtering its water supply, which it is hoped will be in operation by May 1 of next year, construction having been begun about June 1.

engineer calls attention to the advisability of developing this property into an attractive city park, which can be developed from what is now only a dumping ground. He proposes that they cut off and hide from this proposed park both the city stables and the garbage crematory, which already have entrance through alleys, thus avoiding the necessity for the passing of garbage through or in front of the park. Since it is proposed to house the filter and softening plant in attractive buildings, there is no reason why the grounds surrounding these should not form a part of the park. The general plan of the plant given in the illustration shows but one end of this pro-



GENERAL LOCATION OF MUNICIPAL WORKS

McKeesport is located southeast of Pittsburgh, on the south bank of the Monongahela river and the east bank of the Youghiogheny river, which streams join at the business part of the town. Most of the water used by the inhabitants is furnished by a municipal pumping station, which takes its main supply from the Youghiogheny river about a mile above its outlet into the Monongahela; a small amount is also derived from driven wells located along the river bank near the pumping station. This station occupies part of a twelve-acre tract belonging to the city, which lies between the B. & O. R. R. and the river, and which has about 1,500 feet water front and varies in width from 200 to 500 feet. At the narrow end is located the water works pumping station, and at the wide end a garbage crematory and the city stables. In his report the

posed park. The present pumping plant draws water from a pump well, which in turn is fed by gravity by a 16-inch pipe connecting it with the river. From this well a 6,000,000-gallon pumping engine takes water through a 24-inch suction pipe, and two 3,000,000-gallon engines take water each through a 20-inch suction pipe.

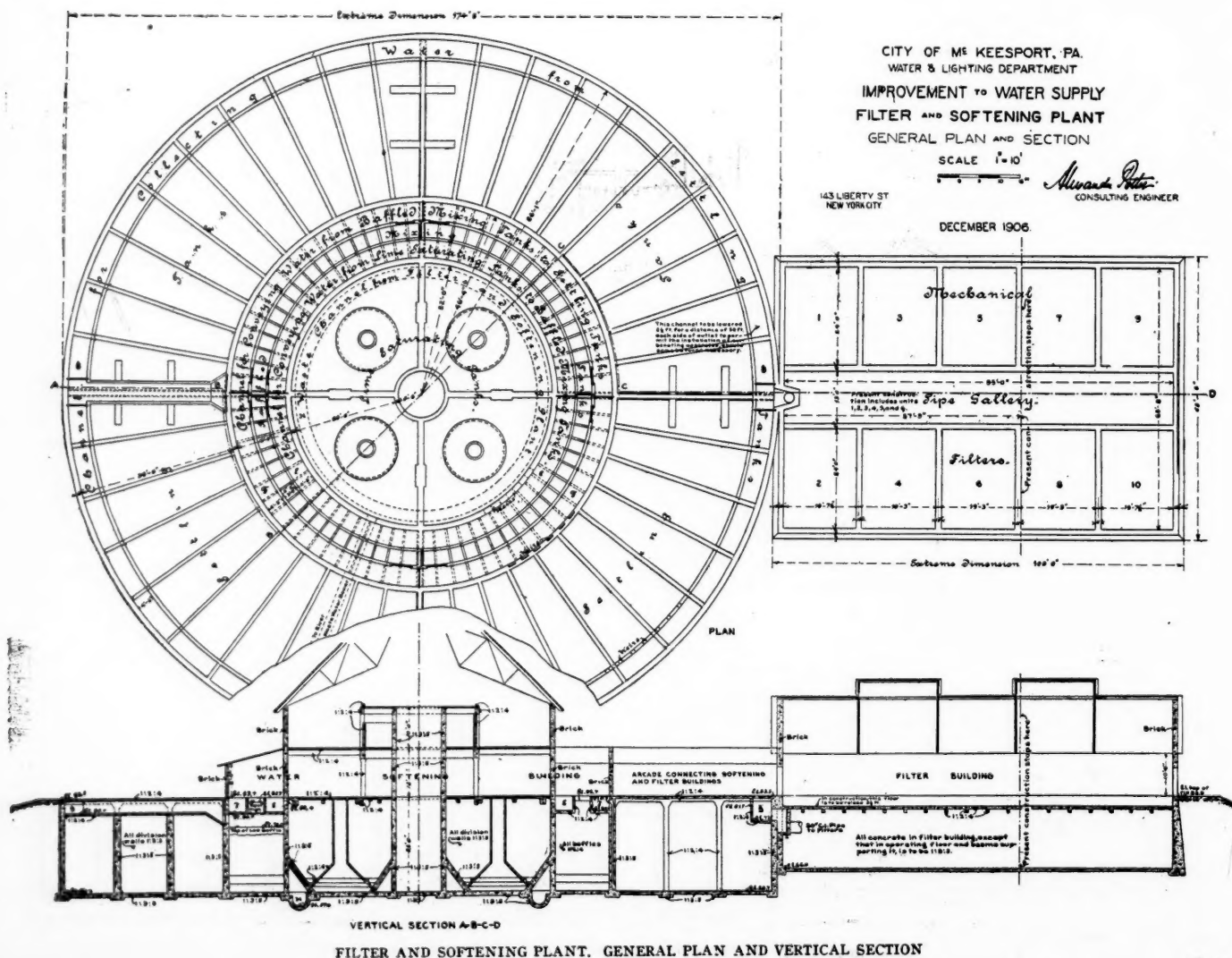
THE TREATMENT REQUIRED

The river water is highly acid, a condition due chiefly to large quantities of sulphurous mine water emptied into it about forty miles above the city, one effect of which appears to be the destruction of most of the disease germs which undoubtedly enter the stream with the sewage from a number of towns. During stages of high water, however, this germicidal effect is minimized and the dangers from sewage bacteria greatly increased, and the typhoid rate during 1904 was 129 deaths per 100,000. Above Connellsville the water carries a great deal of lime and magnesia, and these united with the sulphuric acid

form sulphates of lime and magnesia, the cause of permanent hardness;" free carbonic acid also is increased, the power of which to dissolve lead makes the use of lead service pipes dangerous. The well water contains calcium and magnesium sulphates in quantities as high as 315 parts per million; moreover, the number of bacteria is greater than in the river water, and pollution of the ground water feeding these wells is suspected. So great is the sulphate hardness of this water that the design provides for independent treatment of it, or even cutting it out altogether when necessary. It is seen that, aside from the dangers consequent on sewage pollution, the water of both river and wells is unfit for either a potable or manufacturing supply. It is, therefore, proposed to remove or neutralize the mineral acids by a softening plant and then treat the water by mechanical filtration. The water-softening process is to be carried on in a circular brick and tile roof building three stories high above the basement, the superstructure being 92 feet in diameter on the ground floor, 64 feet in diameter on the second floor, and 177 feet in the basement; the latter to be of reinforced concrete. The softening process combines the use of caustic lime and soda ash; the former to neutralize the carbonic and sulphuric acid, the latter to reduce the natural hardness and also that added by the caustic lime.

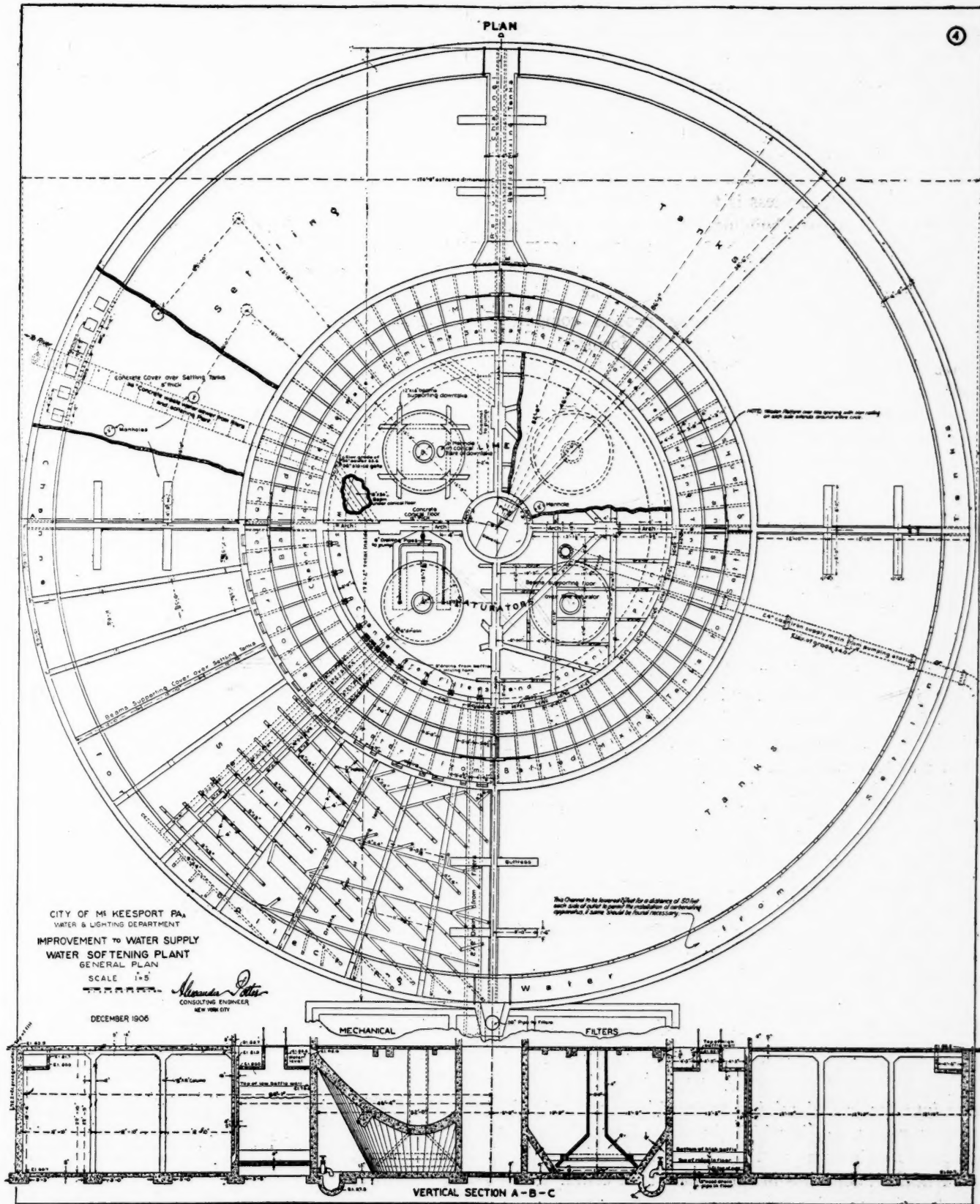
LIME SATURATORS

The softening plant is designed for a capacity of 10,000,000 gallons in twenty-four hours. The water from the river and that from the wells enters the softening plant through separate cast-iron mains which discharge into separate weir boxes, each containing a diverting appliance fitted with a graduated scale, so that the relative diversion may be changed from time to time as the water composition changes. By these contrivances the water is divided into two portions, the larger of which flows to the channel surrounding the lime tanks, where it is joined by the other portion which has become saturated lime water. The smaller portion passes into the down-take pipes of the lime saturators, one of which, the preliminary saturator, gets its supply of lime from the unspent lime of the other three tanks. These contain at the bottom a supply of milk of lime which is agitated mechanically to keep it in suspension. From the down-take the water passes out horizontally and up through the milk of lime, dissolving sufficient of the latter to become saturated, and so slowly as to carry no suspended milk of lime with it through the outlet. From this preliminary lime saturator it passes in the same way through one of the three remaining saturators and then joins the raw water. The object of passing through the second saturator is to be sure that the water is thoroughly saturated,

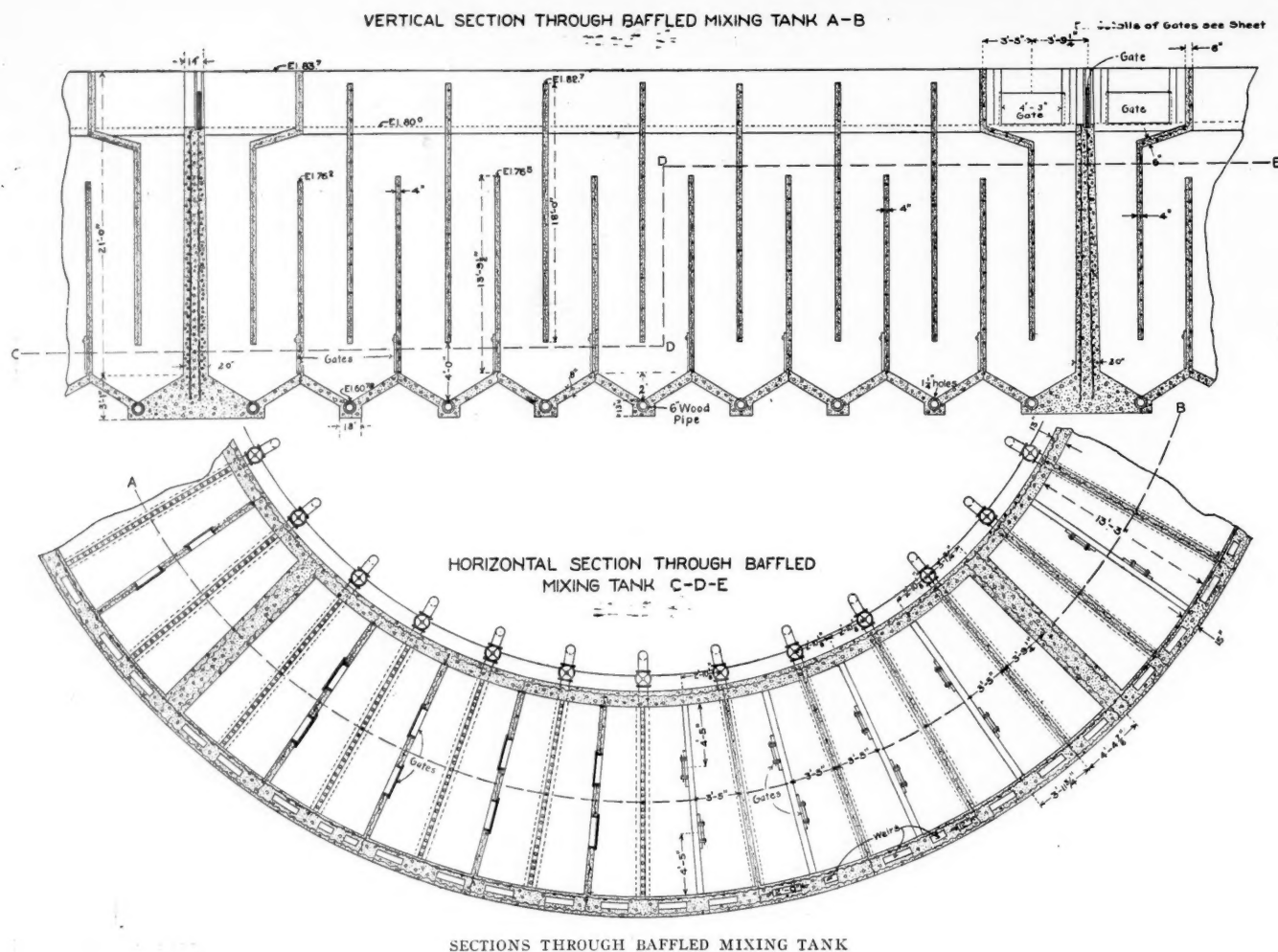


and thus of standard uniform composition. Since the lime is not absolutely pure nor completely soluble, and since precipitates form through the action of the lime on impurities in the raw water, it is necessary at intervals to draw off the deposits which accumulate, but which are mixed with considerable good lime. This material is drawn off from the other saturators to the preliminary

saturator in order that the lime contained may not be wasted; but since it is impure, the water, after passing through this tank, may not be completely saturated, and is, therefore, passed through the second saturator containing the purer lime water to complete the saturation. When the material in the preliminary saturator has given up all of its lime it is flushed out to the waste drain.



GENERAL PLAN AND SECTION OF WATER SOFTENING PLANT



MIXING APPARATUS

The milk of lime for charging the ordinary lime saturators is prepared on an upper floor of the house which covers the lime tanks. The lime is brought from the storage house in a hand car and hoisted to one of the three slaking vats by an elevator, and there slaked and churned into a thin cream by the addition of water and chemical agitation. On the same floor are two soda dissolving tanks and two coagulant dissolving tanks. As fast as batches of solutions are made up in these dissolving tanks they are discharged into receiving vats on the floor below. From these the solutions are fed to regulating devices which continuously control the amounts supplied in proportion to the amount of water undergoing treatment and to the requirements of this water as ascertained by frequent tests. These amounts are capable of instant variation corresponding to the variations in the composition of the raw waters.

FEEDING THE CHEMICALS

From these devices the soda solution flows to the circular channel already mentioned, where it mingles with the raw water and lime water. The mixture flows from here into the baffled mixing tank which surrounds the lime saturators, and in which the water flows alternately up and down between vertical partitions to effect a thorough mixing. Mixing in the baffled tank continues for about an hour at time of maximum flow, or proportionately longer at lower rates of operation. From the mix-

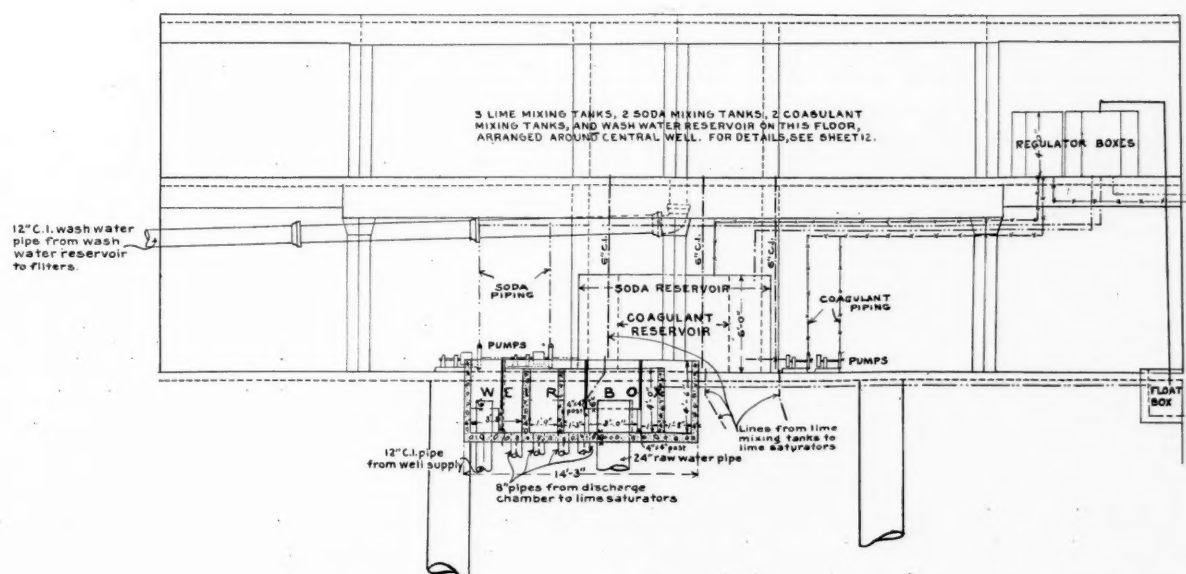
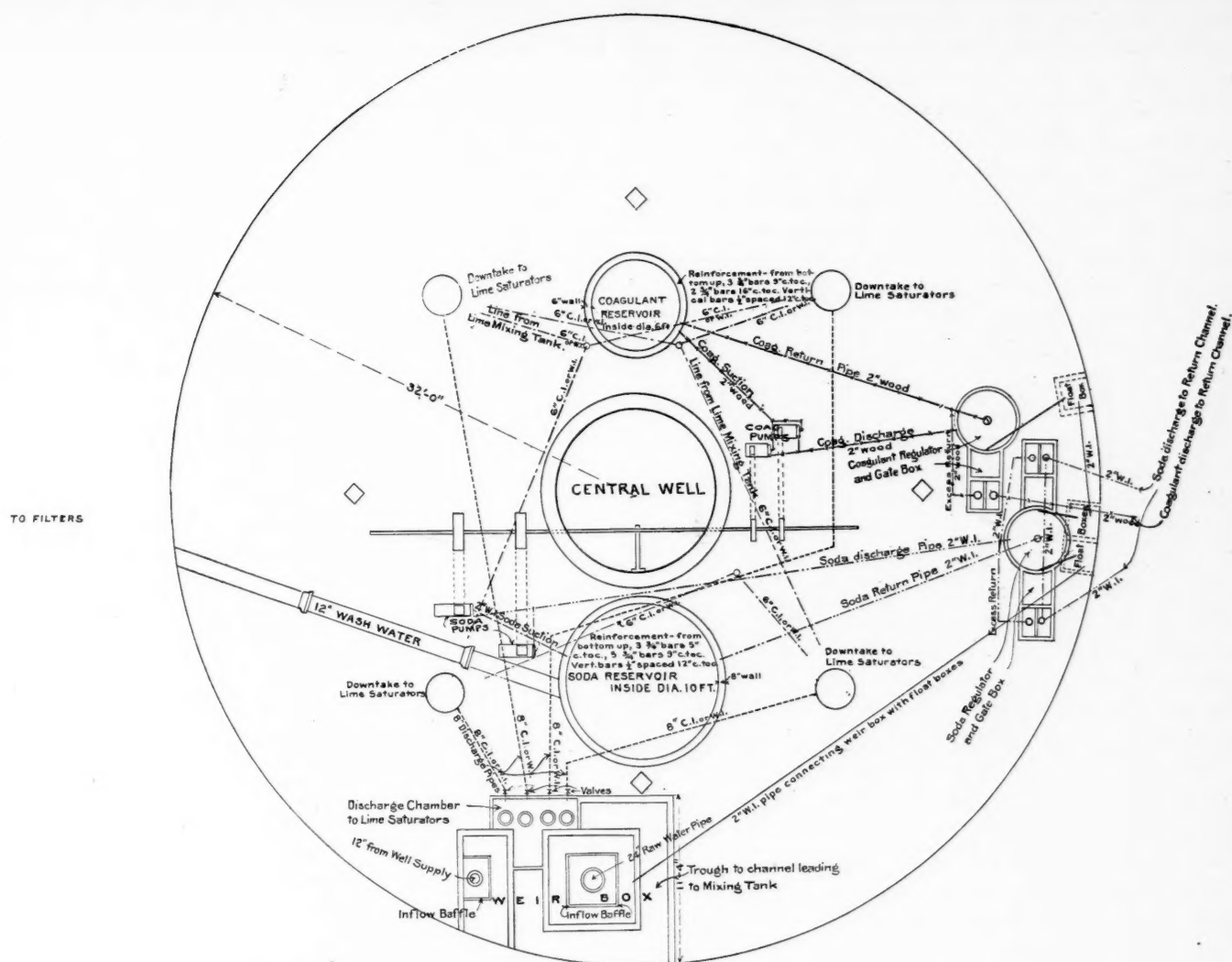
ing tank the water enters the circular channel just inside the inner wall of the settling tanks, flowing from there through numerous weirs and downtakes to nearly the bottom of the settling tanks. (The downtakes are kept free from sediment by the occasional use of a stiff brush.) From here the water flows toward, and enters the collecting channel near the top of the outer wall of the settling tanks, which have a combined settling capacity of somewhat over 7 1-4 hours when operating at maximum rate. The precipitates subside here, the water slowly passing from the downtakes to the collecting channel, through which it flows to the mechanical filters.

COAGULATING

When the raw water does not contain sufficient mineral matter precipitable by the softening process to coagulate the suspended matter, the procedure is modified, the water traversing only half of the mixing tank, then two of the settling tanks, then through the return channel into the second half of the mixing tank and from this into the second half of the distributing channel and the other two settling tanks; a coagulant being added to the water as it enters the second half of the mixing tank. By adding the coagulant to the partially settled water a considerable saving of coagulant is effected over what would be required if it were added to raw water.

SLUDGE DISPOSAL

In the bottom of each settling tank are numerous channels, covered with perforated slabs with holes equally



8" W.I. or Cast Iron discharge pipes to lime saturators shown thus -----	Total length 126 ft.
6" W.I. or Cast Iron pipes from lime mixing tanks to lime saturators shown thus -----	" " 235 ft.
2" Wrought Iron soda pipes shown thus -----	" " 170 ft.
2" Wrought Iron pipe from float box to weir box shown thus -----	" " 46 ft.
2" Wooden coagulant pipes shown thus -----	" " 124 ft.

CHEMICAL PIPING, WEIRS AND REGULATORS

spaced, which channels lead to four main channels controlled by 8-inch gates, each main channel serving one-quarter of the area of each tank, the division between these areas being transverse to the course of the water.

The mixing tank is covered by a wooden floor which is easily removable to permit the cleaning of the baffle walls from such precipitate as may adhere to them, which cleaning will ordinarily be accomplished by the use of a swab on the pole. If more thorough cleaning should be desirable it would be necessary to enter the tanks after drawing off the water. Wooden sludge pipes are fixed in the mixing tanks under the suspended partitions, through which the sludge is flushed into the waste water drain.

PROVISION FOR CARBONATING

In some plants after-precipitation subsequent to treatment has given difficulty, but the engineer believes that this is ordinarily due to imperfect mixing or too short a period of precipitation. He believes that both of these have been avoided by the construction of this plant and that no trouble from after-precipitation will be found. If it should be, however, the remedy would be in carbonating, and provision is made for adding a carbonating plant, consisting of a small furnace for burning coke, a chamber in which the gases from the coke furnace are washed to remove sulphur dioxide and other soluble gases, and an absorption chamber in which a desired amount of the carbonic acid thus formed is absorbed by the treated water.

PURIFICATION GUARANTEED

The contractor is required to guarantee that when the lime used contains 90 per cent. or more of calcium oxide and when the soda used contains 58 per cent. of sodium oxide, the lime or soda used shall not exceed the amounts specified as follows for each grain per U. S. gallon of each substance here mentioned, contained in the raw water:

	POUNDS FOR EACH 1,000 U. S. GALLONS.	
	LIME. (90% Calcium Oxide.)	SODA. (58% Sodium Oxide.)
Free Carbon Dioxide.....	0.223
Sodium Carbonate (as bicarb)...	0.093
Calcium Carbonate	0.098
Magnesium Carbonate	0.234
Calcium Sulphate	0.124
Calcium Chloride	0.151
Magnesium Sulphate	0.079	0.141
Magnesium Chloride	0.103	0.177
Ferrous Sulphate	0.070	0.110
Ferric Sulphate	0.074	0.126
Aluminum Sulphate	0.087	0.147
Ferrous Carbonate	0.169
Free Sulphuric Acid	0.100	0.171

When the use of coagulants is necessary the amounts of lime and soda specified above may be increased by amounts chemically equivalent to the coagulant added.

The contractor also guarantees that the effluent shall at no time contain in solution more than $4\frac{1}{2}$ grains of calcium and magnesium salts, expressed as calcium carbonate; that it shall contain no free acid, and that all suspended matter shall be thoroughly coagulated.

ADDITIONAL FEATURES

The mechanical filters are of the gravity low tub type in six units, each of a capacity of 1,000,000 gallons in 24 hours; guaranteed to deliver an effluent clear, colorless,

free from matter in suspension, and showing an efficiency of bacterial removal of not less than 97 per cent. when the bacteria in the raw water exceed 2,000 per cc., not to exceed 50 per cc. when the raw water contains less than 2,000. The filters are being erected by the Pittsburg Filter Company, of Pittsburg, Pa., and follow their general plans.

Concrete is used for practically all of the walls, foundations and floors in the basement, mixed, 1:3:5. Beams and floor slabs above the ground floor are of 1:2:4 concrete. Steel reinforcement is used quite generally throughout the work.

Many of the features of the plant we have not space to describe in special detail. An industrial railway is provided, for bringing the chemicals from the chemical storage house to the water softening plant; and an elevator carries the car to the upper floor where the mixing vats are located. The power is provided by a 400-h.p. water-tube boiler. There are centrifugal pumps with a capacity of 4,900 gallons per minute against a 36-foot head, operated by a 75-h.p. engine; also five centrifugal pumps accessory to operating machinery of the softening plant; also two Pelton water wheels, one to operate the mixing machinery and one to run the 6-inch centrifugal lime-saturating pump, which will be operated by water under city pressure of 115 pounds per square inch.

The State Commissioner of Health, in giving permission for the construction of this plant, makes the following conditions: "The admission of raw river water to the water pipe system of the town or to any part of the works except the water softening and filtration plant is prohibited except in extraordinary emergencies. This obtains also with respect to ground water. To safeguard the public interest, there should be an emergency intake from the river to the new pump well. The valve on this intake shall be closed under seal. Whenever used, the Commissioner of Health should be notified." "A chemist and skilled attendant shall be placed in charge of the operation of the water softening and filter plant. Weekly reports of said operation shall be submitted to the Commissioner of Health on blanks to be furnished by the State Department of Health."

The general contract for the construction of the water softening and filtration plant was let to the firm of Bowman Brothers Company, of McKeesport, who are doing the construction work proper themselves, but have sublet the water softening apparatus to the L. M. Booth Company, of New York City, and the mechanical filter to the Pittsburg Filter Company, of Pittsburg. They have also sub-contracted with the Rust Boiler Company, of Pittsburg, Pa., for a 400-h.p. Rust vertical water tube boiler; with Dravo, Doyle & Co., Pittsburg, Pa., for De Laval steam turbine pumps; also with the Pelton Water Wheel Company for the water motors. The contract price for the filtration and water softening plants, buildings and accessories, was \$151,119. The designs for both the plants, and for other improvements in the water system, were prepared by Alexander Potter, Consulting Engineer, New York City, to whom we are indebted for the facts above set forth.

MUNICIPAL BOND SALES

Data Concerning Sales of Municipal Bonds During July by Cities of Less than 100,000 Population—
Financial Statistics of Cities Listed

NAME OF CITY	Estimated Population	ACTUAL VALUE OF ASSESSABLE PROPERTY (estimated)		Ratio of asst to actual value	Bonded Debt	Sinking Fund	NET BONDED DEBT		Tax Rate per \$1,000 Ass'd Value	BOND SALES, July, 1907				Basis
		Total	Per Capita				Total	Per Capita		Term of Years	Amount	Interest	Price	
Livingston, Ala.	1,200	\$450,000	\$375	50%	\$20,000	\$1,000	\$19,000	\$15.83	\$5.00	1-20 ser.	\$20,000	5%	Par.	
Pomona, Cal.	8,500	46,000,000	1,882	25%	106,500		106,500	12.53	17.00	1-40	40,000	4 1/2% s.a.	\$100.137	4.415
Sacramento, Cal.	50,000	27,000,000		50%	775,000	None			15.00	1-40 ser.	300,000	4 1/2% s.a.	100.003	3.999
Brighton, Colo.											3,500	5%	100.14	
Wilmington, Del.	90,000	55,000,000	611	80%	2,956,850		2,956,850	32.85	15.00	8 1/2 avg.	430,000	4 1/2% s.a.	96.50	4.50
Bradentown, Fla.										20-30 opt.	20,000		Par.	
Deland, Fla.											15,000	5%		
Boston, Ga.										20	10,000	6%	Par.	
Hartwell, Ga.										15 avg.	10,500	5 1/2% s.a.	Par.	
La Grange, Ga.										10-20 ser.	5,000	5 1/2% s.a.	Par.	
Coeur d'Alene, Ida.	7,500	5,000,000	666	66 2/3%	101,000	5,000	96,000	12.80	46.50	17 avg.	20,000	5 1/2% s.a.	99.75	5.02
Chicago, Ill.										9 1/2 opt.	40,000	4 1/2% s.a.	100.05	4.495
Elgin, Ill.										1-20 ser.	80,000		Par.	
Sterling, Ill.										8 1/2-25 avg.	1,200,000	4 1/2% s.a.	100.008	3.999
Waverly, Ill.										4 avg.	58,000	4 1/2% s.a.	Par.	
Nashville, Ind.										1-5 ser.	10,000	4 1/2% s.a.	100.615	
Petersburg, Ind.										10-16 ser.	3,000	5 1/2% s.a.	101.033	4.627
New Hampton, Ia.										1-10 ser.	2,800	4 1/2% s.a.	100.19	3.981
										1-10 ser.	5,600	4 1/2% s.a.	103.12	3.374
										1-18 ser.	18,000	4 1/2% s.a.	Par.	
										15-30 opt.	40,000	5 1/2% s.a.	Par.	
										49 5-6	300	4 1/2% s.a.	101.50	
										49 5-6	56,020	4 1/2% s.a.	101.10	
										49 5-6	6,000	4 1/2% s.a.	100.10	
										49 5-6	5,000	4 1/2% s.a.	100.10	
										49 5-6	3,100	4 1/2% s.a.	100.75	
										49 5-6	10,000	4 1/2% s.a.	100.505	
										49 5-6	2,000	4 1/2% s.a.	100.55	
										49 5-6	32,020	4 1/2% s.a.	100.50	
										49 5-6	10,000	4 1/2% s.a.	100.375	
										49 5-6	2,000	4 1/2% s.a.	100.30	
										49 5-6	40,000	4 1/2% s.a.	100.25	
										5-10 opt.	13,300	6% s.a.	104.387	5.00
Lafayette, Ky.	5,000	5,000,000	1,000	40%	15,000	7,000	8,000	1.60	12.50	40	145,000			
Louisville, Ky.										30 1/2	45,000	4 1/2% s.a.	Par.	
Shreveport, La.	32,000	27,000,000	843		337,000	10,485	326,515	10.20	17.62	40	103,000			
Portland, Me.										30 1/2	18,000	4 1/2% s.a.	Par.	
Rockland, Me.	9,000				323,363	1,000	322,363	35.82	22.50	0 1/2 avg.	55,000	4 1/2% s.a.	103.301	4.085
Haverhill, Mass.	40,818	26,964,866	661	100%	1,757,000	535,644	1,221,356	29.93	15.64	7-15 opt.	13,000	4 1/2% s.a.	Par.	
Lawrence, Mass.										20	49,000	4 1/2% s.a.	100.39	3.971
Bay City, Mich.										1-30 ser.	75,000	4 1/2% s.a.	100.089	3.906
Eaton Rapids, Mich.	2,200	1,250,000	568	66 2/3%	50,000	None	50,000	22.73	12.00	30	200,000	4 1/2% s.a.	Par.	
Hudson, Mich.										20	15,000	5%	103.70	4.712
Mt. Pleasant, Mich.										3 1/2 avg.	20,000	5%	100.75	4.763
Onaway, Mich.										20	15,000	4 1/2% s.a.	101.346	3.902
Wayland, Mich.	700	800,000	1,143	50%	15,000		15,000	21.43	8.00	1-10 ser.	10,000	5%	100.15	4.968
Comfrey, Minn.	375	600,000	1,600	25%	4,000		4,000	10.67	25.00	30	15,000	5%	Par.	
St. Cloud, Minn.	10,860	2,600,565	239	33 1/3%	264,000		264,000	24.31	39.20	2-5 ser.	4,000	6% s.a.	Par.	
										15	50,000	5% s.a.	102.20	4.792
											15,000		100.163	
St. Paul, Minn.										30	135,000	4%	Par.	
Jefferson City, Mo.										10	50,000		Par.	
Monett, Mo.										10	44,000	4 1/2%	Par.	
Princeton, Mo.	2,000	1,000,000	500	33 1/3%	18,500		18,500	9.25	1.65	10-20 opt.	7,000		101.257	
Spickard, Mo.	700	400,000	571	40%	6,000		6,000	8.57	2.50	5-20 opt.	10,750	5%	Par.	
Houston, Miss.										5-20 opt.	6,000	5 1/2% s.a.	Par.	
Bradshaw, Neb.										20	6,000	6%	Par.	
Seward, Neb.										5-20 opt.	6,000	6% a.	101.00	5.767
Bronxville, N. Y.										5-20 opt.	15,000	4 1/2%	Par.	
Harrison, N. Y.	1,300	1,834,000	1,411	100%	64,000	None	64,000	49.23	15.00	5-24 ser.	18,400	5%	Par.	
Hoosick, N. Y.										5-29 ser.	175,000	4 1/2% s.a.	100.20	4.481
Ithaca, N. Y.	15,000	15,000,000	1,000	55%	574,000	None	574,000	38.27	15.80		17,000		Par.	
Kenmore, N. Y.	1,000	1,800,000	1,800	60%	94,600	4,000	90,600	90.60	6.62	5-20 opt.	660,000	5 1/2% 4.65%	100.66	4.85
Mt. Vernon, N. Y.	30,000	35,560,000	1,185	80%	2,278,300	613	2,277,687	75.92	20.70	1 1/2 avg.		4.65%	100.043	4.645
New Berlin, N. Y.										6	20,000	5 1/2% s.a.	102.178	4.581
Oneida, N. Y.	8,800	5,000,000	568	66 2/3%	350,000	None	350,000	39.77	28.17	5-14 ser.	5,000	4 1/2%	Par.	
										1-10 ser.	33,169		Par.	
										1 1/2 avg.	25,000		103.20	4.187
										3 avg.	4,500		100.03	4.480
Port Chester, N. Y.	3,500	3,873,158	1,107		205,800	None	205,800	58.80	7.78	3-10 ser.	17,000	4 1/2% s.a.	100.96	4.388
										5 1/2 avg.	4,750		100.05	4.488
										1 ser.	2,000		100.02	4.491
Port Henry N. Y.	2,200				63,850	4,150	59,700	27.14		1-16 ser.	8,000	5%	101.00	4.855
										1-10 ser.	76,000	4 1/2% s.a.		
Troy, N. Y.	76,000	54,250,172	714	100%	3,541,679	85,779	3,455,900	45.47	17.66	1 1/2 avg.	7,319	5 1/2% s.a.	Par.	
										3	100,000	4 1/2%		
Yonkers, N. Y.	68,000	60,019,750	883		5,018,682	299,600	4,719,082	69.40	24.48 1/2	3 1/2 mos.	100,000	4 1/2%	Par.	
										5-10 opt.	2,500	4 1/2% s.a.	Par.	
										40 1/2 avg.	15,500	5%	Par.	
										6 mos.	46,000	4 1/2% s.a.	100.11	4.78
New Bern, N. C.	16,000	6,000,000	375	75%	185,000		185,000	11.56	8.25	30	30,000	5 1/2% s.a.	100.833	4.946
Shelby, N. C.										30	35,000	5%	100.571	4.963
Windsor, N. C.	1,400	400,000	286						2.83	5-14 ser.	5,000	6% s.a.	100.50	5.931
Alliance, O.	15,000	12,467,370	831	33 1/3%	578,190		578,190	38.54	30.20	1-5 ser.	21,000	4 1/2%	100.13	4.453
										20	5,350	4%	100.196	3.985
Ashtabula, O.	16,000									3 1/2 avg.	24,000	5% s.a.	102.297	4.249
										31-6 avg.	24,920			
Bridgeport, O.											10,000	4%	103.00	
Bucyrus, O.										4-11 ser.	10,500	4 1/2% s.a.	Par.	
Canton, O.	45,000	60,000,000	1,333	25%	306,000		306,000	68.00	32.00	10	4,000	4 1/2% s.a.	103.26	3.608
											1,800		101.50	3.817
Chardon, O.										5 1-6 avg.	9,500	5% s.a.	102.536	4.436
Chauncey, O.										1-5 ser.	1,000	6% s.a.	101.25	5.642
Cincinnati, O.										20	90,000	3.65% s.a.	Par.	3.705
										30	23,000	4 1/2% s.a.	105.37	
Columbus Grove, O.										0 1/2 avg.	12,500	4 1/2% s.a.	100.42	4.445
										7 1/2 avg.	14,200	4 1/2%		
										5 1/2 avg.	36,000	5%		
Conneaut, O.	11,000	5,400,000	491	50%	98,000	8,000	90,000	8.18	1.10	55-6 avg.	5,800	5%	101.789	4.542
										55-6 avg.	4,200	5%		
										6 1/2 avg.	2,500	5%		

MUNICIPAL BOND SALES—Continued

NAME OF CITY	Estimated Population	ACTUAL VALUE OF ASSESSABLE PROPERTY (estimated)		Ratio of asst to actual value	Bonded Debt	Sinking Fund	NET BONDED DEBT		Tax Rate per \$1,000 Ass'd Value	BOND SALES, July, 1907				Basis
		Total	Per Capita				Total	Capita		Term of Years	Amount	Interest	Price	
Crestline, O.										1-10 ser.	\$15,000 14,000 1,850	5% s.a.	\$102.982	4.384
Creston, O.										7½ avg.	6,300	5% s.a.	105.007	4.196
Delaware, O.	11,000	\$7,000,000	\$636	56%	\$214,584	\$14,365	\$200,219	\$18.20	31.70	1-10 ser.	10,000	5% s.a.	105.10	3.958
Findlay, O.											800		Par.	
Greenville, O.	7,850	6,500,000	828	50%	148,000	30,000	118,000	15.03	2.90	5½ avg.	4,000	4% s.a.	100.009	3.979
Hamilton, O.	30,000	22,000,000	733	50%	1,064,505	54,684	1,009,821	33.66		15	6,000	4% s.a.	101.66	3.853
McComb, O.										1½ avg.	2,790	5% s.a.	101.030	4.305
Mansfield, O.										1-10 ser.	5,000	4% s.a.	Par.	
Marion, O.										1-5 ser.	1,600			
Melina, O.										1½ avg.	2,500	4% s.a.	100.06	3.961
Minerva, O.										22½ avg.	23,000	4% s.a.	100.087	3.927
Napoleon, O.	5,000	3,000,000	600	33½%	186,890		186,890	37.38	47.20	1-10 ser.	17,000	5% s.a.	100.52	4.891
Newark, O.										2½ avg.	2,185	5% s.a.	101.233	4.519
New London, O.										3½ avg.	2,100			
										2 avg.	1,750	5% s.a.	101.101	4.615
										2½ avg.	4,100			
										3½ avg.	1,125			
										1-10 ser.	20,000			
										½ avg.	5,000	4½% s.a.	101.532	4.39
										1-10 ser.	5,000			
										1-10 ser.	2,000			
										25	4,000	4% s.a.	101.875	3.882
										20	17,000	4½% s.a.	107.307	3.967
										25	35,000	4% s.a.	101.767	3.889
										25	6,500	4% s.a.	100.175	3.926
										20	35,000	4% s.a.	101.54	3.888
Penfield, O.										31-6 avg.	2,500	6% s.a.	100.75	5.73
										41-6 avg.	680	6% s.a.	101.027	5.72
										10	8,000		100.385	3.953
Sandusky, O.	23,000	14,000,000	608	50%	640,000	10,000	630,000	27.39	16.92	11	6,000	4% s.a.	100.432	3.951
Shalersville, O.										0	5,000	4% s.a.	100.315	3.958
Warren, O.	500	550,000	1,100							3 avg.	5,000	5% s.a.	101.40	4.96
										1½-4½ ser.	6,800	5% s.a.	100.798	4.711
										51-12 avg.	912	4½% s.a.	100.48	4.686
Wauseon, O.	3,000	2,500,000	833	30%	91,417		91,417	30.47	42.40	51-6 avg.	1,326	5% s.a.	100.841	4.313
										51-6	11,413	4½% s.a.	100.841	4.313
Willoughby, O.										5½ avg.	8,500	4½% s.a.	101.788	4.123
Woodsfield, O.	2,000	2,000,000	1,000	45%	78,000	2,400	75,600	37.80	2.80	5½ avg.	7,780	5% s.a.	102.30	4.522
Yellow Springs, O.										3½ avg.	1,930	5% s.a.	101.347	4.547
										31-6 avg.	7,000	5% s.a.	101.678	4.411
										31-6 avg.	3,730	5% s.a.	101.665	4.505
										31-6 avg.	10,885	5% s.a.	101.672	4.412
										31-6 avg.	6,545	5% s.a.	101.665	4.414
Youngstown, O.	60,483	50,882,000	940.45	50%	1,269,112	209,167	1,059,945	17.52	20.42	31-6 avg.	2,000	5% s.a.	101.105	4.61
										31-6 avg.	3,980	5% s.a.	101.441	4.592
										4½ avg.	42,000	5% s.a.	103.052	4.27
										41-6 avg.	15,000	5% s.a.	102.675	4.278
										31-6 avg.	1,560	5% s.a.	100.384	4.864
										21-6 avg.	375	5% s.a.	100.266	4.864
										30	25,000	6% s.a.	105.00	5.657
Sayre, Okla.										15-30 opt.	100,000	4% s.a.	100.80	3.929
Altoona, Pa.										8-25 ser.	18,000	5% s.a.	100.55	4.95
Baden, Pa.											5,000	4% s.a.	Par.	
Butler, Pa.	20,000	16,000,000	800	50%	160,000		160,000	8.00	22.50		50,000	5% s.a.	Par.	
Myersdale, Pa.	4,500	2,500,000	556	33½%	72,000		72,000	16.00	23.00		200,000	4½% s.a.	102.19	4.335
Washington, Pa.											100,000	5% s.a.	105.23	4.597
Woonsocket, R. I.											27,000	4½% s.a.	100.50	4.451
El Paso, Texas.	45,000	35,000,000	778	50%	577,000	43,000	534,000	11.87	1.86	20	40,000	4½% s.a.	Par.	
Sherman, Texas.	17,000	12,000,000	706	50%	350,000		350,000	10.50	15.00	1-27 ser.	27,000	4% s.a.	Par.	
Logan, Utah.	8,000	5,000,000	625	45%	152,000	None	152,000	19.00	12.00	20	40,000	4½% s.a.	Par.	
Hoquiam, Wash.	10,000			20%	None	None			10.00		40,000	4½% s.a.	Par.	
Amherst, Wis.										1-5 ser.	2,500	5% s.a.	90.00	5.36
Stevens Point, Wis.	9,750	5,000,000	513	60%	7,850		7,850	0.81	23.40	8-18 opt.	10,000	4% s.a.	98.00	4.298

Water Purification by Storage

THE Water Examination Committee of the Metropolitan Water Board of London, England, have presented an exhaustive report respecting the work carried out at the Board's laboratory during the twelve months ended March 31 last. The report gave, in considerable detail, the results obtained in the testing of 11,993 samples of London waters, and also dealt at length with the important question of the value of storage. Dr. Houston stated in regard to this question that there was a consensus of opinion among bacteriologists that pathogenic microbes did not multiply in storage reservoirs, but gradually lost their vitality. The time required to effect the destruction of these bacteria was matter for controversy, and although the American authorities considered a few days might suffice, most British bacteriologists placed the limit at a much longer period. The essential point was that each day's storage made for safety, and that a time arrived eventually when all the pathogenic bacteria had perished,

and in such a case subsequent filtration was required to improve only the chemical and physical qualities of a water already incapable of giving rise to epidemic disease. Until the safety limit had been determined (and it doubtless varied according to the quality of the water and the season of the year), it was obviously desirable to store water for as long a time as was economically possible. In this connection it might be asked whether storage, if too prolonged, might not actually lead to deterioration in the quality of a water. The fact, however, remained that in relation to danger to health over-storage was believed to be impossible. Undoubtedly from the epidemiological point of view, apart from questions of cost of pumping, the storage reservoirs should be so worked as to give each drop of river water abstracted for water works purposes the maximum number of days' detention in store. Dr. Houston also draws attention to the difference between "active and passive storage" and the great importance of active storage from the epidemiological point of view.

THE DISPOSAL OF MUNICIPAL WASTE

Systems and Methods, with Special Reference to American Conditions—High Temperature Destructors—The Cell and the Continuous Grate.

By W. F. MORSE, Sanitary Engineer

This Series of articles, begun in the February, 1906, number, will be continued until completed and will be illustrated by original drawings, cuts, diagrams and pictures, and contain many tables valuable for reference.

The Subjects Already Treated by the Author Are:—

1. The Waste Collection Service in American Towns; Methods and Results.
2. Definition of Terms; Quantities; Proportions; Character of Waste in General.
3. Garbage; Analysis; Proportions; Values.
4. Dry Refuse and Rubbish; Quantities and Treatment.
5. Classification:—Commercial Values and After Recovery.
6. The Refuse Utilization Stations in New York, Boston, Buffalo, and Brooklyn (illustrated).
7. Municipal Ashes; Analysis; Proportions; Values when Separated.
8. Ashes from Cremation of Garbage; Analysis and Values; Comparative Table.
9. Comparison of Ashes from English and American Cities; Cremation Means.
10. The Utilization of Municipal Waste in General; English and American Methods.
11. Commercial Values of Refuse and Ashes when Marketed and Manufactured.
12. The Analysis of Garbage; Tankage; Its Value (Special Tables).
13. The Garbage Disposal Plant, Cleveland, Ohio.
14. Street Sweepings; Fertilizing Value and Treatment.
15. Comparative Commercial Values of Waste.
16. Foreign Destructors; Special Chapter by an Eminent Authority.
17. The First Garbage Cremators.
18. Official Reports on Cremators.
19. Chronological List of American Crematories from 1885.
20. List of Government and Institutional Installations.
21. Consolidated Tables of Installations; Hygiene and Sanitation.
22. Types of Furnace; the Operating American Furnaces (fully illustrated).
23. Portable Crematories (illustrated).
24. Summary of American Furnaces.
25. The Destructor System Using High Temperature (illustrated).

The Following Are to Appear:—

26. Calorific Value of Waste as Fuel (Comparative Table).
27. Reduction and Extraction Process Described and Illustrated; the Earlier and Later Methods.
28. American Methods; Col. Waring and His Successors.
29. Present Situation in This Country; Résumé.
30. Means for Improvement as Suggested by Several Investigators.
31. What May Be Expected of the Future.

The Burning of Wet Fuels

"The conditions of success in burning wet fuel are the surrounding of the mass so completely with heated surfaces and with burning fuel that it may be rapidly dried, and then, so arranging the apparatus that thorough combustion may be secured, and that the rapidity of combustion be precisely equal to and never exceed the rapidity of dessication. When this rapidity of combustion is exceeded, the dry portion is consumed completely, leaving the uncovered mass of wet fuel which refuses to burn."

(Prof. R. H. Thurston, 1874. "Steam Boiler Economy" by Prof. Wm. Kent. Jno. Wiley & Son: N. Y., 1906.)

High Temperature Destructor Systems

The second class or group of furnaces for cremating municipal waste follow designs and construction quite different from those of the first group, and they differ widely in their methods of operating and in the final results obtained.

There are four of this class or group of destructors now in use in the United States and Canada, and three other large installations in progress of construction. Of these four, three follow one uniform design with certain modifications and additions in each, while the fourth is a design and construction of a separate and special distinguishing type.

The whole list of destructors operating by high temperatures can be classed in these two types, and it seems desirable to give brief descriptions of these in order to

form a clear idea of their relative value when applied to the disposal of American municipal waste.

These destructors are divided into two classes: (1) the cell or isolated burning chamber form, and (2) the continuous grate with a common-burning chamber.

The Cell Destructor, Figs. 68-71, consists of two or more cells completely isolated from each other, but discharging into a common combustion chamber. This construction of cells in pairs is together called a unit. Each is charged, fired and clinkered by itself. One cell cannot be of assistance to its neighbor, except so far as the gases from both commingle after leaving the cells. The arrangement of the cells may be side by side or back to back, or built in rows, with a combustion chamber or large flue common to all, but for the utilization of heat to produce steam power there are usually one or more units of two cells with a boiler common to both. Some makers place the cells on each side of the boiler. Others arrange them in rows with the main flue beneath. These arrangements, though apparently different, are for the same purpose—insuring the destruction of the gases from fresh charges of waste, so that these in turn shall be made to pass over hot surfaces or be mixed with hot gases.

Each cell has a fire bar area of at least 25 square feet, where the actual combustion takes place, and at the back of the bars a sloping, drying hearth of fire brick, upon which the fresh charge is received. The area of this hearth varies with the style of destructor, and may be made larger or smaller, according to the character of waste consumed. This hearth is usually inclined at an angle of 25° to the horizontal, but may be varied as desired. The fire bars, as a rule, are heavy, solid cast or wrought iron plates, set edgewise with very narrow spacing to admit the steam or air blast from beneath and not permit the passage of clinker or ashes. Some makers use a narrow rocking grate at the front of the furnace with larger stationary bars behind.

THE AIR SUPPLY TO THE CELLS

The ash pits of all forms of destructors are closed airtight and made capable of sustaining pressure, and the air for combustion is delivered to the ash pits below the grates, passing up through the waste upon the fire bars. Each ash pit is thus divided from its neighbor, and in each the forced draft may be applied or discontinued at will. This, of course, is when forced draft by steam or air is a part of the particular construction.

When there is no system of forced draft, and fire is maintained by the natural chimney draft, the air is supplied through the ash pit doors in the usual way of boiler work. The ashes, in this case, fall through the fire bars and are removed below from the ash pit doors.

(This operation is illustrated in American practice by the cell destructors of the Thackeray Incinerator Type at Montreal and San Francisco. See description in this journal for November, 1906.)

The air supply is one of the most important points in connection with the cremation of municipal waste. With a limited supply the combustion is delayed and temperatures are low. With a too abundant volume, the available fuel is consumed to heat the air, which leaves the furnace too rapidly to destroy the waste.

In cell destructors a pressure of one-half to one inch water gauge, equivalent to 2.6 to 5.2 pounds per square foot of grate is the most desirable medium. While a certain quantity of air is necessary for the combustion, and while this varies according to the calorific value of the material destroyed, if a larger volume at greater pressure be supplied, there arise different conditions which materially affect perfect combustion. With the oxygen of the atmosphere is mixed four times its weight of nitrogen, a gas perfectly inert for assisting combustion, but having its own specific ability to absorb heat.

The surplus volume of oxygen not actually required for combustion, united to the correspondingly larger volume of nitrogen, rapidly takes up the available heat, and the whole uncombined volume is carried off to the chimney, lowering the temperature of the burning mass upon the grates. Hence the admission of a larger volume of air than is actually needed for combustion is as detrimental to successful work as is the limitation of the air supply.

HEATING THE AIR SUPPLY.

The heating of the air supply is another important consideration as affecting the rapidity of combustion. When air at atmospheric temperature enters a furnace it must be raised to the temperature of the incandescent carbon in the fuel with which it is to combine before it can aid combustion, hence a certain amount of heat that has been generated is delivered to the incoming air, and the temperature of the burning mass is lowered to that extent. For the ordinary refuse-burning furnace, this means a loss of efficiency and an increased quantity of fuel. For destructors with forced draft that must maintain high temperatures, this is a more serious matter, and in the most efficient destructors there are arrangements for heating the air supply. In one destructor of the cell type the air is made to pass through flues alongside the main chimney flue, and thence to the furnace through iron boxes built into the sides of the furnace at the level of the grates. But most destructors of this type do not provide for heating the air, but force it at the temperature of the outside air by fans or steam jets into the ash pit and up through the fire bars. Whatever be the means for obtaining the forced pressure of air supply under the fire bars, the result is the same in all methods, a continuous current of air, which is at all times under control and may be increased or diminished according to the conditions required, and the character and amount of waste charged into the furnaces at different periods of time. This is especially desirable when destroying bodies of animals.

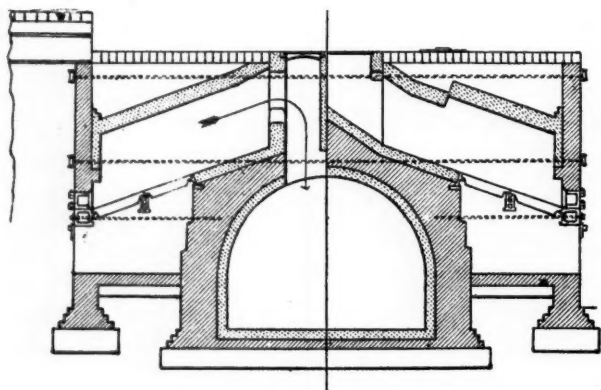


FIG. 68. THE FIRST "FRYER" DESTRUCTOR

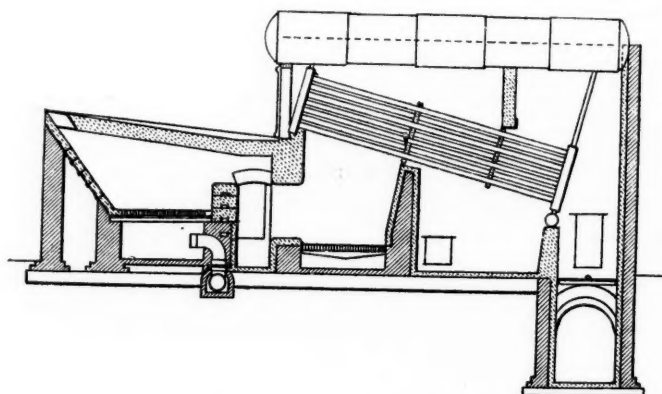


FIG. 70. BEAMAN AND DEAS CELL DESTRUCTOR

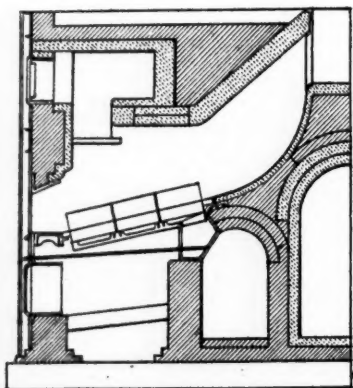


FIG. 69. HORSFALL CELL DESTRUCTOR

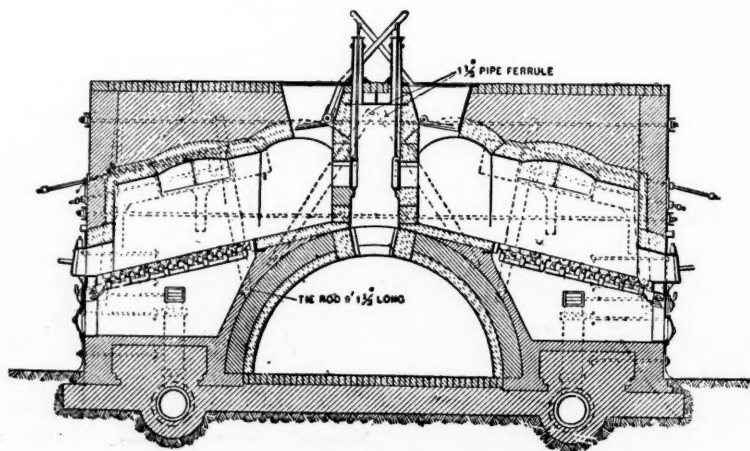


FIG. 71. THE WARNER CELL DESTRUCTOR

THE CELL DESTRUCTORS

UTILIZATION OF THE HEAT GENERATED

In all installations of the best destructors, the heat generated by the combustion of refuse is utilized in one or another way. The general use is for generating steam in a boiler, the power from which is employed, first for the operation of the destructor itself and the surplus for any work where it can be used to advantage.

The type of boiler is commonly a water-tube so placed behind the combustion chamber that the gases pass directly to the tubes with no loss of heat. A Lancashire boiler with large flues is frequently employed on account of the heat stored in the volume of water. The horizontal multi-tubular boiler of large size set in the main flue to the chimney was formerly used, but now discontinued as an obstruction to the free passage of the gases.

The best efficiency of a destructor demands that the temperature from the combustion of refuse shall be at least 1,500° Fahr. This is the point at which all injurious organisms in the waste and the inflammable gaseous carbon compounds resulting from imperfect combustion are destroyed. A lower temperature would permit these to pass through the boiler and chimney flues and be distributed from the chimney top through the surrounding air. A higher temperature, 1,800° to 2,500°, not only gives better boiler efficiency, but also positively insures destruction of all noxious gaseous and organic elements. Hence the efforts of all destructor builders are directed to the production and maintenance of the highest possible temperature within the furnace and in the combustion chamber or flues immediately adjoining. This naturally leads to the development of the greatest boiler efficiency and the use of this power for returning a revenue in some form to the advantage of the town.

But it must always be noted and remembered that *the first consideration is the disposal of objectionable matters*. This is the purpose of a destructor—the main object of its installation. Whatever power may be obtained is a side issue, a by-product, to be utilized if possible; if not, then to be ignored until an opportunity offers.

If this power, obtained from waste that would cost large sums to dispose of in other ways, can be employed, then the town is so much to the good. If it cannot be at once profitably employed, the waste is still disposed of at no greater cost and with the certainty of perfectly sanitary destruction, and permits the eventual use of the power and the clinker.

UTILIZATION OF HEAT FOR AIR SUPPLY TO THE FURNACE

After the gases have passed the boiler there is still a large amount of heat remaining in them which should be utilized. In practical service the cell form of destructor has heretofore been unable to conserve this heat for its subsequent use. In one form only has this been tried, and the results claimed are equal to the best designs of the continuous grate destructor, which are better adapted for this purpose, but no results from actual practice have yet been reported.

Manifestly the heating of the air supply is a gain to the general efficiency of combustion too important to be ignored. When the air is raised to 350° to 400° Fahr.

before being supplied to the grates, there is a corresponding gain in the time and the force of combustion upon the grates. The method of air delivery is by two different forms of apparatus.

The cell destructors, as a rule, use a fan driven by a motor, delivering the air at atmospheric temperature under the ash pits at any required pressure. In this case the temperatures of the current are those of the volume entering at the fan and but slightly above this at the grates, and the air has to be heated to the furnace temperature to continue the combustion.

In the continuous grate system the gases from the boiler are drawn by the chimney draft down through a series of iron pipes, entering at an average of 691° and leaving these pipes at 359° Fahr. The difference between these figures represents the temperature of the current of air drawn between the rows of pipes and by steam jets forced into each ash pit and up through the fire bars.

This is the regenerator system of the continuous grate destructors which deliver the air for combustion at 350° to 400° instead of at 70 to 80° as furnished by the fan system. There is an obvious advantage by this means not obtained in the other cases, and the most recent plants of all types generally adopt the steam forced draft.

The Second Group of Destructors

CONTINUOUS GRATE WITH ONE BURNING CHAMBER

The destructors built upon this principle (Figs. 72-76) differ from the cell construction in several particulars. Instead of separate and distinct cells isolated one from the other, there is one long chamber common to all the grates, but divided below the grates into separate ash pits.

There may be a number of grates, each of approximately 25 square feet of surface, arranged side by side, and offering a continuous area of burning surface the whole length of the series, which may be two, three, four, five or six, as the conditions require.

Since each grate has its own ash pit and its separate forced air supply, each may be operated separately, precisely as is done in the single cell, with no interference or interruption with the work of its neighbor. As the grates are charged periodically, there are always one or more at the highest point of temperature in full working, while the adjoining one is being supplied with green material. Thus, there is no loss of time or temperature in the immediate destruction of smoke and gases thrown off from the fresh charge, since the active grates supply the heat necessary to continue the combustion and maintain the average temperature in the combustion chamber.

The continuous grate is better adapted to the various forms of feeding or charging of the waste, since it may be charged from the top through the roof, from the back through charging doors, or from the front through the larger clinker doors.

Choice between these various methods depends largely upon the character of the waste—the purpose for which the power is used, or the location of the several working parts of the destructor. In each case the arrangement may be made to conform to the special conditions, and any well-designed destructor may be adapted to the site.

REGENERATOR SYSTEM OF HEATING AIR FOR COMBUSTION

The first practical application of air regeneration to the destructor practice was in connection with a continuous grate destructor of the Meldrum type, at Darwen, in 1897. The use of this system has in effect changed and revolutionized the art and made it possible to destroy waste of low calorific value, and obtain a higher temperature with a corresponding increase in rapidity of combustion and boiler efficiency. By this method of drawing the air for combustion through the series of pipes comprised in the "regenerator," aided by the action of the steam jet blower, the exhaust heat from the boiler flues heretofore wasted has been saved, and the saving brought to the aid of the furnace.

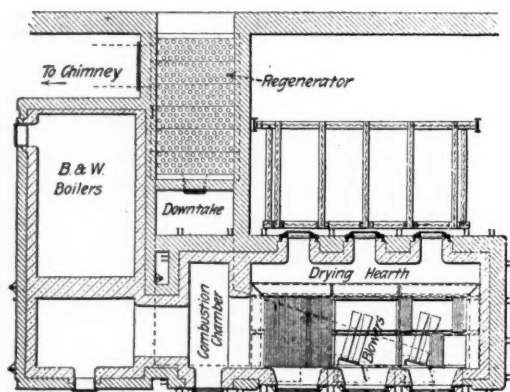
The method of supplying this heated air after its passage between the vertical tubes of the regenerator is by means of steam jets. Underneath each of the grates in the enclosed ash pit is placed a short tube of cast iron which is connected at one end with a small pipe direct from the boiler—the other end, expanded in area, terminating under the middle of the fire bars. The steam, in its passage through the blower, carries a volume of heated air from the hot air duct, which is forced up between the grates and through the mass of material thereon. Thus the air for combustion is supplied at a temperature of nearly 300° above the normal temperature of the current which would be supplied by a fan blast.

Nor is this the only advantage of the steam jet system. In passing upward through the bed of fire upon the grates, the steam is decomposed and "water gas" is formed, consisting of hydrogen and carbon monoxide. Both of these gases are burned when they enter the main chamber, increasing the temperature at that point where it is most wanted, while the oxygen, which is set free by the decomposition in the early stage of this process, assists the combustion of the refuse.

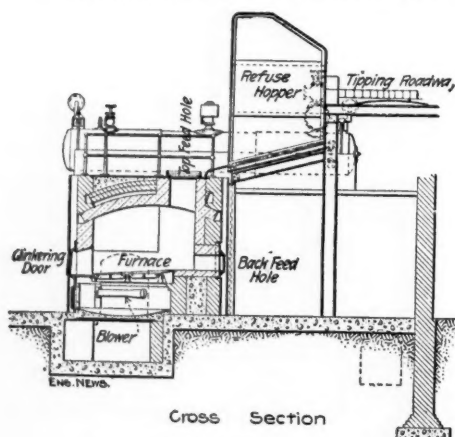
Again the formation of water gas in the bed of incandescent fuel on the grate greatly assists in the removal of the clinker, and in some instances exhaust steam is admitted under the grates for this purpose. The underside of clinker thus formed has a clean and vitreous appearance, leaving the fire bars with comparative ease, making the work of clinkering less arduous and prolonging the life of the fire bars.

THE CHIMNEY, AND DUST PREVENTION

High chimneys are not wanted in connection with forced draft destructor installations. If the chimney be of small diameter and of unusual height, the gases, in their passage, acquire a considerable velocity and carry with them a larger proportion of dust. On their arrival at the top, the spreading of the gases issuing from the confined area lowers their velocity, precipitating the dust on the ground and buildings in the neighborhood. But with a chimney of lower height and larger internal area,



Sectional Plan.
FIG. 72. MELDRUM CONTINUOUS GRATE



Cross Section
FIG. 73. MELDRUM SIMPLEX

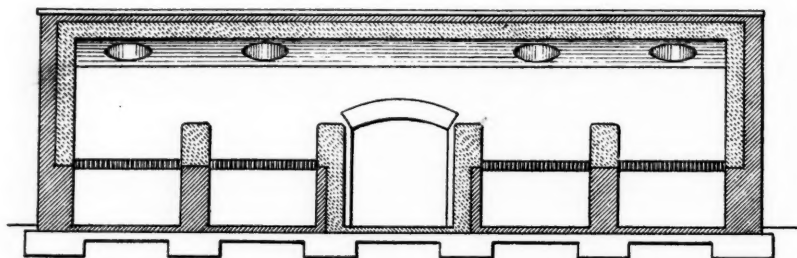


FIG. 74. STERLING DIVIDED GRATE

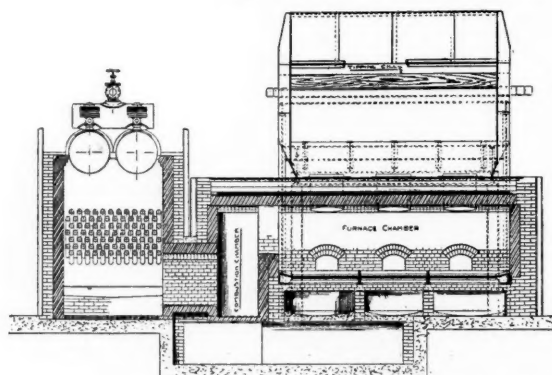


FIG. 75. MELDRUM CONTINUOUS GRATE AND BOILER

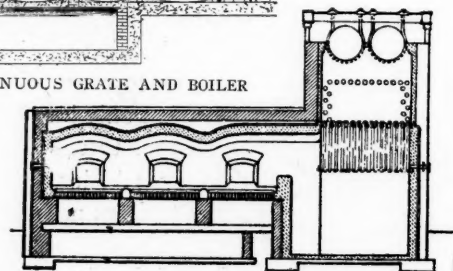


FIG. 76. HEENAN AND FROUDE DESTRUCTOR

THE CONTINUOUS GRATE DESTRUCTORS

the ascent of the gases is slower and the velocity at the top no greater than in the interior, and the dust precipitation is minimized. There are several devices for intercepting the dust on its way to the chimney. In one destructor installation there is a brick chamber, or "dust catcher," immediately before the chimney, comprising two concentric circular chambers with an annular space between. The gases enter the outer chamber, and in passing around this acquire a whirling, circular motion. The centrifugal force imparted causes the dust, as the heavier substance, to move to the outer wall, the lighter gases passing into the inner chamber and thence up the chimney. This device has been employed with some satisfaction in a few installations.

A better method is an expanding settling chamber interposed in the path of the gases, delaying their passage and causing a deposit of the dust after their velocity has been much reduced. This is an important feature in the continuous grate type of destructor.

DELIVERY OF THE WASTE TO THE DESTRUCTOR

There are several methods of delivering the waste, dependent largely upon the special character of the material to be destroyed.

The destructors, as a rule, deal with mixed or unsorted waste—the miscellaneous collection as it comes in the city carts. The proportions of each class, garbage, ashes and refuse or rubbish, to which may also be added street-sweepings and the carcasses of animals, are dependent upon many varied conditions, only to be determined by special survey or inspection. Some of the more common conditions attending the usual collections of American municipal waste have been alluded to in previous articles in this journal, and so far as can now be done, the proportions of each class have been defined.

Following the practice of those towns where these various forms of destructors are used, and employing the same method of a mixed unsorted collection of the wastes, it may be positively stated that the American municipal waste can be destroyed successfully with apparatus similar to that used abroad.

Not only can American municipal waste be burned economically with no noxious results, but there can be obtained power from this waste, in exact proportion to the calorific value of the waste.

But when the several classes of American municipal wastes are separated at the houses and the garbage, ashes and refuse are separately collected and brought either singly or together to the destructor, the means of disposal must be adapted to the character of the waste to be consumed. Here lies one of the chief points of advantage of the high temperature destructor systems. The furnace may be so designed as to cremate one class or kind of waste and yet be capable of consuming other kinds or classes without change in construction and with only changes in method of charging and operating. The addition of power supplied by its own boiler provides an accessory impossible to furnaces not equipped with this aid.

In most American towns the custom is to separate, in

the households, the garbage from the refuse and ashes and bring this to the crematory for destruction.

This grew out of the fact that this class of waste is the one that gives most trouble to deal with, is not the largest in amount when considering the whole body of municipal waste, and is not the most costly to collect and transport.

This led to the introduction, at first, of a special form of crematory to burn garbage only, and in the older forms of furnaces this is all they can accomplish. Subsequently the rubbish and refuse upon the dumps became objectionable and the crematories were enlarged in grate area to burn this also. The bodies of the smaller animals are included and very infrequently the carcasses of the larger animals must be destroyed.

As the quantities of garbage, rubbish and animals increase, the crematories must be made of larger capacity. Because of their operation by slow natural chimney draft, the rate of combustion cannot be increased, and the installations must be made of larger size, which, of course, means greater expense to the towns.

If the cost of operating were lowered with the proportional increase in size, there would be some reason for this, but this is not the case, for the larger the plant, the more men needed to work it, with a corresponding increase in the payroll, to which is added the larger amounts of fuel.

An illustration of this is one incinerator, which in 1902 began its work by the installation of a plant costing \$31,000 which destroyed 100 tons daily, followed in 1904 with a plant having a capacity of 120 tons at a cost of \$70,000, and in 1907 a plant of 140 tons capacity is contracted for at a cost of \$126,000. The reported cost of operating, for fuel and labor at this latest plant is more than that at the first installation.

Since the practice of many American towns is to make separate collections of the wastes, and since this requires the destruction of these separately, the destructor builders have now designed the apparatus to meet this demand. For the disposal of very wet substances there is a drying hearth of greater or less area, which receives the charge of fresh garbage and by its radiated heat united to the high temperature of the radiant heat of the destruction chamber, the moisture is driven off and combustion begins almost at once.

This change in the forms of destructors has been noted and provided for in the practice of the builders abroad. There are many instances of destructors dealing with the most refractory classes of wet refuse, like sewage sludge and wet trade waste, with nearly the same efficient results as though there was present a greater calorific value. The development of steam power is not so large, but the destruction is equally efficient and the results quite as free from offensive odors and gases.

The method of supplying the waste to destructors is then determined by the character of the material. If it be wet and difficult to handle, the charging may be done by special cars or chutes direct to the drying hearth. If more free from moisture, there is provision for tipping

into receiving hoppers or storage bins that will retain a day's collection without nuisance. Should these wastes be comparatively dry and homogeneous in character, they may be fed by hand firing as coal is fed to a furnace. Thus the means of feeding the waste, and the construction or arrangement of the destructor is governed largely by the special conditions of each case, insuring economy of labor and expense, and producing the best results in efficiency.

THE DISPOSAL OF RESIDUUMS

It has been noted previously that the ash of American crematories is not in a perfectly vitrified form. There is present a considerable proportion of organic matter, mixed with fine ash from substances that burn more freely, and with the debris and fragments of incombustible matter which the low temperatures of the crematory cannot affect. This ash has little or no value, except as a surface fertilizer for top dressing, and therefore must be removed to dumps.

But the clinker or hard vitreous matter from the combustion at high temperatures of a destructor is residuum of quite another character. The analysis of the two ashes given previously shows clearly the difference (see *MUNICIPAL JOURNAL* for June, 1906). The value of clinker when thoroughly calcined, lies chiefly in its ready use as foundation for roads, walks, and all forms of municipal service where concrete is employed. It is also used in many kinds of private contract work, where broken stone is costly or unattainable. It is also found to be suitable for the covering for sewage filter beds and is used for under drains. It may be ground up for mortar or mixed with cement, formed into slabs or bricks or in many ways and forms used in various industrial enterprises. A market can nearly always be found for this destructor product, and it is an important asset in the accounts of all waste disposal work.

(To be continued.)

Municipal Sidewalk Laying

ALL cement sidewalk in Menasha, Wis. (6,000 population), is laid by the city; no wooden walks are allowed to be put down, either by municipal authorities or by private contractor. The city bears part of the cost of the sidewalk, on the principle that not only the owner of the abutting property, but the public as a whole, is profited; that is, the city charges the owner eight cents a square foot, whereas the actual cost is about twelve cents a square foot, and private contractors in the neighboring cities get sixteen cents a foot.

The walks are never less than five feet wide, and consist of six inches of cinders covered with four of concrete, and a top coat of cement about an inch thick. Crushed blue limestone is used, furnished from the city quarry by a municipal stone crusher. The city furnishes the cement, water, stone and working equipment, hires all laborers and pays a contractor, who is in immediate charge of each of the two gangs of twelve men, three cents a square foot. The two crews together lay 2,000

to 2,500 square feet a day. There are now some twenty-two miles of cement paving in Menasha, which is a good showing for a city of 6,000. Labor receives from \$1.75 to \$2 a day.

The city stone crusher, from which is obtained the broken stone for sidewalk concrete and for macadam streets, is equipped with a gasoline engine for running conveyor and crusher, and a boiler for operating the steam drill. The capacity is about 50 cubic yards a day, and the plant runs perhaps 150 days in the year. The city sells surplus crushed stone to builders and contractors, but furnishes no building stone. The entire outfit represents an outlay of \$6,500, \$3,500 of which was paid for the five acres of quarry. The cost to deliver the crushed stone to any part of the city, averaging long hauls and short, is \$1 a cubic yard, two cubic yards to the wagon load.

The quarry and crusher are located in the territory belonging to the adjoining city of Neenah, and were the occasion of a lawsuit four or five years ago, when the plant was first acquired. Certain citizens sought an injunction against the city owning and operating such a plant on the ground that it had no right to own real estate outside of its own municipal boundaries. The city won the suit, however, the court holding that the quarry was for municipal purposes equivalent to a gravel pit, and as such might be acquired and operated, even when located outside of the city limits.

Dust-Laying Experiments

THE State Highway Commission of Massachusetts is making extensive but conservative tests of the various materials claimed to prevent dust on roads, and expects to expend about \$20,000 this year in such work. Tarvia has been given more extensive tests so far than any other material. A preparation of Kentucky oil in which asphalt was dissolved has been tried at Revere Beach and in Watertown, in which latter place a gravel road was treated with it. One of the points which the experiments so far seem to demonstrate is that these materials are of little value on a new road, it being necessary that the macadam should become consolidated under traffic, if the cementing and dust-laying effects of the applied materials are to be maximum or permanent.

New Street Sign

THE City of Johnstown, Pa., has recently let a contract for a new style of street sign, designed by William H. Zimmerman, of that city, who will furnish 2,700 of them at 65 cents apiece. This style was selected from about twenty different designs. The signs will consist of a plain black letter attached to a white background of prepared cardboard, the whole hermetically sealed between two plates of glass, backed by two thicknesses of prepared wood, and all firmly bound at the edges with a rim of sheet aluminum. It is said to possess the advantages of being easily legible, impervious to water and easily repaired in case of accident.

NEWS OF THE MUNICIPALITIES

Divers Subjects of General Interest and Their Treatment by City Councils and Officials—Streets, Water Works, Lighting and Sanitary Matters—Police and Fire Items—Government and Finance

Roads and Pavements

ALTOONA, PA.—Residents on Tenth street are dissatisfied with the new paving laid by the Ganz Construction Company, because regulation cement grout has been used instead of the practically noiseless asphalt filler asked for by their petition. The contract called for the use of Metropolitan brick, but the Gantz Company claimed they could not get them and the Department of Public Works agreed to the substitution of Hillside bricks, which cost a little more, and the change in filling was made to keep the cost within the original amount.

DETROIT, MICH.—After months of debate, investigation by committee and delay of street improvements, the Common Council awarded the contract for supplying about \$35,000 worth of creosoted wood paving block to Russell & Jennison, and just as the matter seemed ended Alderman Rosenthal filed a motion to reconsider the vote by which the contract was granted, on the ground that Russell & Jennison were not the lowest bidders. The Council Committee on Streets went to Indianapolis, Ind., Newark, N. J., New York and other cities to investigate the conditions under which the block is manufactured at the plants of the three companies who bid. The bid of the Wyckoff Company was \$1.48 per square yard and that of Russell & Jennison \$1.49. The difference of one cent per yard makes a total difference of several hundred dollars. The American Creosoting Company's bid was nearly 20 cents higher than that of Russell & Jennison, but they got the contract for laying one street with creosoted wood block, while the Wyckoff Company got the contract for laying another street, the two amounting to about \$10,000.

KNOXVILLE, TENN.—In several places in the city where the plumbers have made connections, the Board of Public Works found that they have not placed the streets in as good condition as before the work. Capt. W. O. White, Chairman of the Board, is sending notices to the plumbers in regard to placing the street in same condition as found, and according to the law, and if the law is not complied with those doing the work will be cited before the City Recorder to answer the charge of failing to place the streets in proper condition.

LEAVENWORTH, KAN.—Foreman Spielman has used fresh asphaltum entirely in the repairs on Shawnee street pavement and says he has not mixed the cakes of material torn up from the pavement with frest asphalt; naturally the unmixed asphaltum possesses superior wearing qualities and also adheres to the pavement better.

PARK CITY, TENN.—This newly incorporated city will have over seven miles of sidewalks by the time winter sets in, contracts having recently been let for constructing a mile on Linden street and three-quarters of a mile on Spruce street. Already there has been a mile of walk built on Jackson and Jefferson avenues, a mile and a half on Western avenue, half a mile on Virginia avenue, and two miles on Magnolia avenue. There are a few other pieces of sidewalk in the city, not enumerated in the foregoing. On Washington avenue there are a number of old brick walks that are good in all seasons except when it is very rainy and frosty in winter. These will be torn up shortly and concrete walks put down. The majority of the property owners along Fifth avenue want concrete walks put down and will be ready as soon as the city is able to grade for the walks.

Sewerage and Sanitation

DES MOINES, IA.—Three automatic stokers have been installed in the boiler room of the Savary Hotel at a cost of \$4,500, and now only thin white vapor is emitted from the 135-foot chimney in place of the dense volume of smoke heretofore poured out. Complete combustion is secured by feeding the coal into the furnace by a piston, the speed of which can be easily regulated. A hopper, for fine coal, leads to this piston. As the piston is brought back, the coal fills the vacant space and is pushed into the flame by its return. The coal is pushed under the flame and causes but little smoke. It is fed from the center, and as it is burned and more coal is pushed upward the clinkers fall to the side, where they can be easily taken out. The air for the draft is pumped through the side of the firebox underneath the coal.

MARYSVILLE, CAL.—City Council has issued an order directing the Health Officer to prepare and present to the Council a list of all nuisances that exist in the city in the shape of low lots or places not connected with the new sanitary sewer system. It is the intention of the Council to vigorously force the issue, as these low places filling with rain water and having no outlet become stagnant and are a great menace to the public health.

McKEESPORT, PA.—Mayor W. H. Coleman has been notified by State Health Commissioner Samuel Dixon, of Harrisburg, that the officials of McKeesport must comply with the law and make application to the State for permission to build sewer extensions.

NEWARK, N. J.—Complaint has been made by John S. Rodgers and others that the smoke from the stacks of the Public Service Corporation and factories still pours over the adjacent property, and that houses, inside and out, are covered with black grime. Smoke Inspector Daniel J. Maloney, replying to the criticism of his alleged failure to cope with the smoke nuisance, says there is hardly an offender against the smoke ordinance in the city who is not experimenting with some device for producing perfect combustion and abating smoke, and that it is only equitable that they be allowed time to test for the most satisfactory method. Mr. Maloney says he proposes to allow firms four months in which to experiment and then serve peremptory notices.

PHILADELPHIA, PA.—Director Stearns, after a tour of inspection of sewage disposal plants in northern cities, has expressed the opinion that the only practicable sewage disposal system for Philadelphia is a quick reduction plant and one from which the waste, after being chemically purified, can be run into either of the two rivers. He proposes to establish an experimental plant at the Spring Garden station, to determine the character of the sewage to be disposed of from a manufacturing city, such as Philadelphia. Mr. Stearns learned that certain kinds of disposal plants fitted for household waste can never be of use in the disposal of waste from the many different kinds of factories and plants that surround Philadelphia. He says the sand beds in use in some places are all right, but such a system in Philadelphia would cover 4,000 acres of ground. If a sand filtration system can be secured that will not cover much ground, the city might be divided into sections and a number of plants built in different localities.

RENO, NEV.—Col. H. B. Maxson, City Engineer and Superintendent of Streets and Sewers, recently visited Pasadena, Cal., to inspect the sewer system of that city,

which he thinks is particularly adapted to the needs of Reno. He says Reno is outgrowing all the municipal utilities of the past few years, and that some provision must be made that will allow for increase in the future. The sewer system must be completely rearranged, and for handling garbage Col. Maxson recommends cremation similar to the method used in Santa Monica, Cal.

YORK, PA.—A syndicate, composed of New York and Philadelphia capitalists, is reported to have been formed to acquire York's sewerage system in case the people vote against its completion. The syndicate, it is claimed, is basing its efforts upon the certainty that in the event of the failure of the loan bill which would permit the completion of the sewer, some system of sewage disposal will be required, and sooner or later, it is thought, the State authorities will demand that a sanitary system be installed and Councils will be practically compelled to dispose of the present sewers. Opponents of private ownership fear that the corporations, on building the laterals from the curb to the house line, would not only charge for this, but also throw on the property owners the cost of the laterals already laid from the mains to the curb line. This charge, it has already leaked out, had been decided upon by the syndicate and will be 50 cents per lineal foot. The cost to the owner of a house assessed at \$2,000, of the present sewer, is about \$4; the charge of the sewers under city ownership would be at an approximate figure, \$7.

Water Works

CAMDEN, N. J.—A commission of experts appointed a few months ago to report upon means for increasing the water supply has reported to Council, the report having been withheld from publicity for some time to permit the city to obtain options on land desired. They find that the wells which furnish the water draw from an area extending for three miles parallel to the river. Also that no additional amount could be obtained by driving more wells within the area occupied by the present ones, but that by placing new ones outside of this area a large part of the run-off from twenty-six square miles of drainage area could be obtained. Also that by substituting new strainers for the old corroded ones the flow of the old well could probably be increased to about 17,000,000 gallons per day. Tests of various strainers were made to determine the most effective style. The total cost of the proposed improvements is estimated at \$200,000.

CORNING, N. Y.—The work of repairing and rebuilding the impounding basin, and rebuilding and cleaning the reservoir at Pine street, is progressing rapidly. An official at the pumping station says that one of the reasons the water has been so good this season is because the supply pipe in the pond was so placed that it drew the water from the bottom of the pond as it came from the springs instead of from the top of the pond, which is struck by the sun, causing the algæ to decay and give that "fishy" taste. A large hood at the end of the pipe prevents it from sucking the water from the surface.

FORT SMITH, ARK.—Firemen and others have been complaining of insufficient water pressure, and Superintendent S. J. Rosemond, of the Water Company, says "there is too much water being used, and too much wasted, as the mains from the reservoirs are carrying about all they can. In pumping direct for fire, cutting out the reservoirs and using the untouched river water, plenty of force can be furnished, but this is not allowed for general purposes, as the water must be treated before it is sent to the city for use. The city has taken up the matter of buying the water plant, and nothing can be done in the way of improvement until that question is settled. The only way the waste can be stopped is to establish a meter system, and whoever has charge of the plant in the future

should put them in. The new factories and others are asking for water now, but we cannot get to them, for we cannot make improvements without the city's permission."

LOUISVILLE, KY.—In accordance with a request of Mayor Bingham, the City Council has authorized him to investigate the management of the water works (which the city for years has owned under the name of the Louisville Water Company), this investigation to extend as far into the past as he may deem necessary, and to cover the resources, revenues and receipts, all disbursements of every kind, the rates charged and their reasonableness, the quantity of water furnished and the cost thereof. About a year ago the property of the "company" was placed in charge of a Water Works Board. The Mayor believes that "the management under the present Board has been excellent," but many taxpayers "do not believe that the management in the past has been either economical or efficient."

SCRANTON, PA.—A difference of opinion as to the safety of the water supply exists between the State Board of Health and the Scranton Gas and Water Company. The former quotes the city bacteriologist as reporting the finding of the colon bacillus (an indication of sewage pollution) in the tap water from four reservoirs, and advises the citizens to boil all water to be used for drinking purposes. President W. W. Scranton, of the company, states that their bacteriologist is an expert recommended to them by Prof. Sedgwick, of the Massachusetts Institute of Technology, and that this bacteriologist has made daily analyses of the various water supplies since April without finding a single evidence of colon bacilli or of contamination in Williamsbridge water, one of the four reported upon by the city bacteriologist; also that he finds the other waters "safe," comparing favorably with that of Boston.

TACOMA, WASH.—Members of the Council and other officials recently visited the site of the proposed \$1,750,000 water power plant on the upper Nisqually river as the guests of Mr. George Milton Savage, who submitted the bid for this work without specifications. The party rode to Alden, which is near where the intake will be built, and walked back four miles along the proposed flume line to La Grande, where the station will be located.

Street Lighting and Electric Power

ATHENS, GA.—The Athens Electric Railway Company is installing machinery at the substation in the city by which the lights will be perfectly regulated. The incandescent system will also be divided into three circuits, and there will be two plants from which the electricity is secured. In this way the company is reducing to a minimum the chance of the consumers being without lights.

BALTIMORE, MD.—The proposed illumination of Baltimore in honor of Old Home Week comprises an electric fountain eighteen feet high by twenty-four feet square, which will be placed on the Court House plaza. Thirty blocks of streets will be illuminated, the four sides of the Court House will be a blaze of light, and electric bulbs will outline the City Hall dome, the post office, the Shot Tower, No. 6 engine house, the Fifth Regiment Armory and other buildings. The illumination of the City Hall will be of a permanent nature, in order to save the city future expense incident to municipal lighting during conventions.

DAVENPORT, IA.—The new magnetite light that the People's Light Company is to install will soon be ready for use. The lights are to cost the city \$60 per year each. When the new lighting system is installed and put into use the current will be supplied from Moline, Ill., and will come through the big substation at Third and Rock Island streets. The connections there have all been completed,

the wires in the city have been overhauled and the one thing that now remains to be done is to install the arcs.

NEW YORK, N. Y.—The city authorities have abandoned the experiment of lighting Williamsburg bridge and advertised for bids. The use of the plant for the generation of power has been discontinued, but it will still be used as an incinerator. The officials give as a reason for their action that the street refuse produced too variable a fire, and that the cost of providing the light was too high. When the incinerator was established it was estimated that the expense would be about \$45.22 a day, and that the city would be saved \$30,000 a year.

Fire and Police

BALTIMORE, MD.—President Gail, of the Board of Fire Commissioners, has suggested the institution of a pension fund for the benefit of the widows of firemen, the subject having been brought to his attention through the death of Ladderman Gill at a recent fire. Mr. Gail suggests an appropriation by the city of \$5,000 yearly for a widows' fund. At present the firemen's protection fund pays \$1,000 to the widow, but all the firemen do not belong to this. The city now has a pension service for retired or disabled firemen.

LEWISTON, ME.—The Engineers of the Committee on Fire Prevention of the National Board of Fire Underwriters have recently investigated conditions at Lewiston and report the fire alarm apparatus as old and out-of-date, and the electric service unreliable; that the Department is lacking in men, apparatus and horses, and that the conflagration hazard is severe in the principal mercantile district, owing to the predominance of frame construction and many weaknesses in brick construction.

NORWICH, CONN.—Fire Chief H. L. Stanton, in his annual report, presents the following facts: Number of alarms, 125; number of miles traveled, 216½; hours in service, 147¼; insurance on buildings where fires occurred, \$180,670; insurance on contents, \$272,630; total insurance carried on buildings and contents, \$453,300; value of property at risk, buildings \$211,375; contents \$378,415; total, \$589,790; insurance loss paid, buildings, \$4,471.41; contents, \$5,169.11; total, \$9,910.52; loss over insurance, buildings, \$175; contents, \$300; total, \$475. Total fire loss insured and uninsured, \$10,375.52; total insurance paid on buildings and contents, \$9,910.52; total loss above insurance, buildings, \$175; contents, \$300; total, \$475. Insurance paid for year ending June 30, 1902, \$14,444.02; 1903, \$22,089.91; 1904, \$23,989.74; 1905, \$22,548.20; 1906, \$12,903.55; 1907, \$9,910.52; average yearly loss for six years, \$17,647.65. The Chief recommends the erection of a new station at the Falls; the rebuilding of the Thamesville station so as to install a part paid company; that all apparatus be equipped with rubber tires and that the station on Boswell avenue be sold.

PATERSON, N. J.—Chief of Police John Bimson has given strict orders to his men to arrest any persons defacing buildings or sidewalks. The head of the Department declares the manner in which they are marked and painted up is shameful and he will do his best to put a stop to the practice. Some clubs take this means of advertising picnics and if no other means can be devised to put an end to the practise the officers of the clubs will be held. Board fences, mill structures and sidewalks have been daubed up in all sections of the city. The chief objects to having the sidewalks chalked up.

RACINE, WIS.—In conformance with the recent State law, authorizing cities of the class of Racine to provide pension funds for aged or injured police officers, the Council has taken the initial step in this direction and an ordinance providing for the establishment of such a fund was introduced and referred to the committee of

the whole. The ordinance provides that all dog license money, together with all rewards, forfeits, etc., that come into the Police Department, shall be turned into the fund as well as one per cent. of the monthly wage of each officer. Other provisions for creating and maintaining and fund are also made, and the manner in which the money shall be cared for and distributed is also specified. The ordinance will be adopted practically in its present form.

ST. LOUIS, MO.—The forty-sixth annual report of the Board of Police Commissioners shows the expenses of the Department during the past year aggregated \$1,859,841.31; in 1906 the expenses were \$1,625,321.79. Of the total expenditures the sum of \$1,364,484.80 was for salaries, while \$107,044.60 was for buildings and alterations. This includes the new Newstead avenue station and automobile repairs. The report shows that out of the 1,444 juvenile prisoners arrested only nine were girls. The most popular way of breaking the law was by disturbing the peace, according to the figures, 10,307 persons being arrested for this offense, while drunks follow with 6,363 arrests. There were 49 murder cases. The record shows 11,271 laborers were arrested, teamsters come second with 1,325 arrests, and carriage drivers with a total of 863. There were 203 offenders before the Board of Police Commissioners on charges, and one-fourth of this number were acquitted.

WATERVILLE, ME.—According to Chief Berry, of the Fire Department, the city compares favorably, in the matter of fires, with any city in New England. Since January there have been 15 box alarms and 25 still alarms. There have not been so few alarms for years, and during one period of six weeks not an alarm of any kind was rung in. The fire losses for the year up to date are \$60,500, partially covered by insurance. During the year not a building has been burned to the ground or fire caught from another burning building. Chief Berry accounts for the few fires this year by saying that people are exercising more care in the handling of oil and gasoline stoves and lamps.

Government and Finance

BOSTON, MASS.—The Finance Commission is conducting a rigid investigation, and the head of each department has been warned from the Mayor's office to cut down expenses. The greatest cut in expenses so far has been in the Street Department, where about forty teams have been laid off. Officials of the insane hospital, bridge and bath departments, streets, public grounds, and other divisions will be asked what use loans recently passed by the City Council will be put to. The members of the Commission were surprised to learn that a precedent had been established in regard to floral emblems for deceased city officials, and that when any member of the city government or any department head dies the sum of \$250 is spent for flowers.

MOBILE, ALA.—Mayor Lyons has received a letter from Dillon & Hubbard, the New York lawyers for the City Bank and Trust Company, in which they approve of the act authorizing the City of Mobile to refund its old bonds, and state they will authorize the advertising of bids for the sale of the bonds under the Legislative act should the purchasers so desire. Some slight amendments were suggested, which the Mayor and City Attorney Boone made, and forwarded for approval. Upon the return of the papers Mayor Lyons will call a special session of the General Council to have the alterations confirmed. President Buck, of the City Bank, thinks it is well that the New York lawyers upheld the validity of the act, as it was a matter of great doubt whether as good a bid for the bonds as was made by himself and associates could again

be secured, and as an evidence of this he pointed to the trouble that is now being experienced by New York City in disposing of its bonds.

NEW YORK, N. Y.—The Public Service Commission has adopted rules intended to prevent the overcapitalization of corporations which come under the jurisdiction of the Commission. They are also designed to prevent the merging of railroad or public service companies unless it can be proven that it is justified by reasons other than those of mere financiering, and that such amalgamation would tend to benefit the traveling public. The procedure to be followed by companies seeking to increase their capital is also provided for. It was resolved that all applications for permission to issue stock or bonds should be accompanied by sworn statements, in detail, (1) the financial condition of the company; (2) the amount and kind of stock the corporation desires to issue; (3) use to which the capital to be secured by the issue of stock is to be put; (4) the property which is to be acquired, with its value; (5) whether any contracts have been made for the acquisition of such property; (6) whether any of the outstanding stock or bonds or other obligations of the company have been issued or used in capitalizing any franchise.

Refuse Collection and Disposal

BRIDGEPORT, CONN.—The Board of Health has ordered the Bridgeport By-Products Company to discontinue the reduction of garbage and the use of the new sewer recently constructed for its special benefit until it can dispose of the garbage in a sanitary manner and without generating foul odors. The plant will be shut down and the garbage buried. Attorney Sanford Stoddard, of the firm of Stoddard, Marsh & Stoddard, as counsel for the Bridgeport By-Products Company, says the company is fulfilling its contract with the city and that it has a right to have evidence offered that there is any real trouble from odors. He claims there are no overland odors whatever. He says the burial of garbage is not a satisfactory way of disposing of it and that incineration has proved a failure.

PENSACOLA, FLA.—A committee, composed of Mayor Goodman, City Health Officer Bruce and Chairman Daniels, of the Board of Works, has been appointed to select some point where garbage may be placed.

SCHENECTADY, N. Y.—The Department of Health is making every effort to keep the garbage dump, located in a large hollow on Van Vranken avenue, in a sanitary condition. Inspectors are stationed at the grounds to see that the refuse is dumped at the bottom and not on the sides of the hill, and the Board of Estimate and Apportionment will be asked to provide for the expense of keeping the garbage covered with dirt.

SPRINGFIELD, O.—An ordinance passed by the Board of Health is in effect making it necessary for the residents to provide themselves with metal receptacles of not less than ten gallons capacity. Health Officer Baldwin recently made a canvass of the fourteen places in the city where cans are sold and found that over one thousand of them had already been purchased. Dr. Baldwin proposes to have four extra men employed hereafter from May to September, who will be required to go over certain sections of the city thoroughly, find out the unsanitary places, and see that the nuisances are relieved.

WEST ORANGE, N. J.—Commissioner David J. Quinlan, of the Board of Health, advocates the combining of the Oranges and Montclair to the end that a disposal plant be provided for common use. It is Mr. Quinlan's idea to have a meeting of the different Boards of Health of the several municipalities, at which the matter could be taken up and discussed in detail and a combination formed.

Parks and City Beauty

ALTOONA, PA.—Walter S. Greevy says it is the desire of the city authorities that the schools take an interest in beautifying Gospel Hill Park. Councils could not appropriate sufficient money to make all the improvements desirable for this park, and it is hoped the principals and teachers of the schools will take up the matter with a view to planting shrubbery and trees on the site on next Arbor Day. The city officials expect to plant about one hundred trees to begin with. A pavilion is to be built on the summit of Gospel Hill.

BOSTON, MASS.—Dr. L. O. Howard, Chief of the Bureau of Entomology at Washington, characterizes the work in Massachusetts against the gypsy moths as the greatest of its kind the world has ever known. Referring to the laboratory at North Sangus, where experiments are now being carried on, he states that nowhere have such exhaustive and elaborate investigations in practical entomology been carried out. Dr. Howard deplores the stopping of the State appropriation in 1900 and the resulting five years inactivity, as the pests advanced to such an extent that the work already accomplished has been undone. With the increased appropriation he is of opinion that while the moths may not be exterminated they will be so thoroughly checked that the effect of their presence will be minimized.

DETROIT, MICH.—Judge Rohnert, presiding over the Juvenile Court, says that he believes that at least six new playgrounds should be established in different parts of the city. He thinks \$100,000 spent in playground work would do away with a great deal of criminality among children by giving them fresh air and proper exercise and save court expenses, jail, reform school and penitentiary bills if the work were systematically conducted.

INDIANAPOLIS, IND.—Chief of Police Robert Metzger has issued an order urging patrolmen throughout the city to be more careful in their enforcement of the city ordinance regarding the distribution and pasting hand bills along the streets, particularly of the downtown section. The Chief said that there had been frequent reports lately of flagrant breaches of this ordinance and that it was a thing which would not be tolerated. He caused to be read to the men the ordinance specifying the nature of the offense and the penalty. The order is a direct step toward the "city beautiful" and he cautions sergeants and patrolmen to use the greatest care in seeing that the ordinance is not violated in their districts. The practice of pasting bills on sidewalks, fences and poles will not be excused in any case and a rigid prosecution will follow any disregard for the ordinance.

WILMINGTON, DEL.—At the exercises incident to the dual celebration arranged by Wilmington and Chester to further the city beautiful project, both towns have inaugurated, the principal feature was the illustrated lecture by Prof. A. R. Spaid, Superintendent of the New Castle County Public Schools, on the subject, "Let Wilmington Speak for Itself." The slides showed the places that are beautiful and the places that are unsightly. That conditions as pictured exist in Wilmington is hardly credible and that some awful epidemic has not long ago been generated in some of the holes and alleys pictured on the screen is considered miraculous. The lecture showed the residents the light in which others see them, and it is firmly believed that a movement will result which will eventually cause many of the obnoxious spots to be swept from the town. The filthy conditions existing, the disregard for the laws of the city, and the lax manner in which many important ordinances are enforced showed the spectators just how bad conditions really are in Wilmington.

Rapid Transit

NEW YORK, N. Y.—The Public Service Commission has formally approved the plan for the change of the tracks in the subway on Broadway, between 93d and 103d streets, and adopted a resolution calling upon the Board of Estimate to pass the appropriation needed for the carrying out of the improvement. The old Rapid Transit Commission recommended to the Board of Estimate the making of an appropriation for the building of three new tracks between 96th and 103d streets, so as to do away with the grade crossing of the Broadway express and Lenox avenue local trains. The cost of the change is estimated at \$850,000. Theodore Shonts, president of the Interborough, testified at the investigation being made by the Commission that with the additional tracks the local service in the subway would be increased 33 1-3 per cent.

PHILADELPHIA, PA.—The Rapid Transit Company officials, the contractors and Director Clay, of the Department of Public Safety, believe that three months' time would be saved in the construction of the Eastern section of the Market street subway if traffic were diverted from that street one square at a time, so that the subway could be excavated like an open ditch, with steam shovels. A shovel will carry almost a wagon-load at every ascent, and tons of dirt could be removed daily. Each city square would be closed to traffic for about four weeks. Much opposition has been roused to the plan, however, as it would isolate from fire protection many business houses carrying hundreds of thousands of dollars worth of stock, and the Fire Underwriters threaten to cancel all policies.

SYRACUSE, N. Y.—The Syracuse Rapid Transit Company's poles were recently numbered, showing that there are within the city limits 2,609, of which 1,577 are of iron and 1,032 of wood. About 8,000 poles are owned by the Syracuse Lighting Company and about 4,500 are owned by the two telephone companies. The poles owned by the Western Union and Postal Telegraph companies make the total about 20,000. The various companies are complying with an ordinance recently passed by the Common Council requiring the poles to be numbered and labeled.

TORONTO, CANADA.—A movement is again under way for the city to secure the ownership of the Ottawa Electric Railway. American capitalists have been quoted a price for the acquisition at \$3,000,000, in addition to floating liabilities of \$250,000 and a bonded indebtedness of \$500,000. The capitalization is \$1,000,000, and last year's net earnings were 18 per cent., out of which a dividend of 12 per cent was paid, the balance being carried to the reserve. The company's franchise has sixteen years to run, and at the end of that time the city has the right to take over the property at a valuation to be fixed by arbitration. Representatives of another American syndicate have been here inquiring into the terms on which the Ottawa Electric Light Company and the Ottawa Gas Company, now under one control, can also be acquired, and prices have been secured, but no options have been given in either of these cases or in that of the electric railway company.

BERLIN, GERMANY.—The city has taken the first practical steps toward the construction of an experimental line of suspension or overhead railway, with the cars hanging from an elevated rail. The experiment will be tried in the northern part of the city, where the poles are placed and the structural work begun, which, when completed, will present the novel sight of street cars sweeping through the air without supports beneath. The experimental line will be only a few hundred meters long, the object being to test the appearance of the road and how far the supporting pillars will interfere with traffic, rather than the practicability of its operation.

Miscellaneous

ALLEGHENY, PA.—Superintendent Smith, of the Bureau of Markets, has been requested to enforce the market-house rules, which provide that no farmer is permitted to sell to a non-resident or a huckster before 9 A. M., so as to give the residents a chance. In return the farmers are given permission to sell free of license. It is claimed that Italian and Greek peddlers from Pittsburg buy up the choice produce before 8 o'clock in the morning and resell it to the residents at increased prices. These foreign hucksters, it is alleged, in some cases meet the farmer well out on the road coming into the city and, by giving good prices, get the pick of his goods. Should the Superintendent of the Bureau fail to remedy the trouble, Council will be asked to have the market rules put in practice again.

LOUISVILLE, KY.—Mayor Bingham has directed the Police Department to see that the law in regard to the closing of barber-shops on Sunday be strictly enforced, and Chief Haager will have all proprietors notified that prosecutions will follow violations, and customers as well as barbers will be haled into court. This action is the result of the petition sent by the journeymen barbers to the Mayor and Board of Public Safety. The statute against Sunday barbering was passed several years ago, but has been a dead letter, it being contended that the law was class legislation and therefore unconstitutional.

NEW ORLEANS, LA.—Mayor Martin Behrman, Park Commissioner Alex Pujol and Acting City Engineer W. J. Warren visited the newly erected Mehle Market, in Howard street, near Seventh, recently, and, after looking it over, accepted it from the contractors, Messrs. Craven & Kane, this firm being builders of the three public markets, the Mehle, Memory and Ewing, chiefly out of the old materials taken from the Pilie Market. In a short while these three markets will be in the hands of Commissioner Pujol, who will rent the stalls and collect the revenue therefrom. Back of the Mehle Market the forces of the asphalt repair plant laid out and embellished a park, and it will be cared for by the city until a commission is appointed.

OLYMPIA, WASH.—The City of Spokane is guilty of violation of a criminal law of the State, and the Attorney-General has been asked for an opinion as to whom to prosecute as well as how prosecution shall be had. Spokane has placed a dam across the Spokane River in connection with its water plant. The State law makes it a criminal offense to maintain such a dam unless it is provided with a fish ladder. The Spokane dam has no such ladder, and the State game authorities want to prosecute. Probably other cities which have water works are similarly liable for neglect of this law.

SALT LAKE CITY, UTAH.—Mayor John S. Bransford, accompanied by City Engineer Kelsey and Fred Leonard, of the Board of Public Works, recently made an automobile trip over the city inspecting the improvements now in progress. Among the places visited were the new macadam paving on Second avenue, the Fifth South water main, sewer extension and new garbage crematory plant.

TACOMA, WASH.—An ordinance is in force prohibiting express-wagon stands on certain streets, and Council is of the opinion that it is desirable to designate a place for them, which will obviate the nuisance of having them along busy thoroughfares. Some members of the Council suggest the purchase or lease of lots, either by the city or the expressmen, for a stand. If the latter plan is adopted it is proposed to have a central office, where a telephone operator would be in attendance; unless patrons call for a certain expressman, orders to be given to the expressmen in rotation.

REVIEW OF THE PERIODICALS

Abstracts and Synopses of Important Articles Treating of Municipal Topics Which Have Appeared During the Past Month in the Leading United States Periodicals

Growth of Paris in Beauty

EDWARD R. SMITH, who is reference librarian of the architectural library at Columbia University, contributes to *The Architectural Record* for August a very valuable historical resumé of the transformation of Paris. As a compilation of dates and French names, the article is not easy to read, to remember, or to review. Its value is for reference—a value much enhanced by the series of plans which is shown. Yet, one who does read it through will find much that is of interest. The writer points out that the site of Paris, “a shallow basin, composed chiefly of marshes with a quiet river winding through, and bounded by a circle of low limestone hills,” was like the similar sites of London and Berlin, “most unprepossessing,” and he asks us to contrast it with the site of New York. He might have added, also, of Pittsburg or of San Francisco. He speaks of the beauty of Gothic Paris—“gray Notre Dame then fresh from the quarries a creamy white,” and the crooked streets and crowded buildings having a wild fortuitous beauty, much of which “Haussmann swept away, not relentlessly, but with keen regret and with a fine appreciation of its charm.” Yet “the broad, healthy, open splendor which he substituted is really more beautiful in quite an opposite way.” To Henri IV., says Mr. Smith, “is due the characteristic scheme of placing at populous or otherwise important points in the city great public squares surrounded by houses built according to a uniform and suitable design.” Of these the Place des Vosges remains. Louis XIV. established the Place Vendôme and the Place des Victoires. Very interesting is the history of the boulevards, of which only the beginning can be here noted: The simple wall with turrets which sufficed as fortification in the days of Jeanne d’Arc became obsolete, and was replaced, at the time of Henry IV. and Louis XIII. “by a line of triangular bastions which the people called *boulevarts*, a word identified with the German *Bohlwerk* and the English bulwark. The earliest and largest of these bastions was immediately to the north of the Bastille and the Porte Sainte Antoine and was always called the *Grand Boulevard*.” This is the ideal *Ringstrasse*, the like of which “has been substituted for abandoned circumvallation in many European cities, the fine parkway in Vienna being the largest development of the conception.” The account of the Parisian development of the street is also interesting. Mr. Smith says: “The street as we know it did not exist in Greece. The Romans placed their unit, which was essentially Greek, in an open square, or forum, surrounded by columns which gave to it dignity and importance. They also invented a splendid type of street, consisting of a double row of colonnades, with the roadway between, like the *Cardo* and *Decumanus* of Timgad and the central street of Palmyra.” During the middle ages, when fortifications compressed the cities, there

could be no development of the street. The Renaissance brought some improvement in Italy, but the *Via Larga* in Florence and the *Via Nuova* in Genoa, while useful, are not in the least ornamental. “It was the special task of Paris in the Bourbon period to invent and carry to perfection the ideal street. The boulevard, or avenue, then created is fine in itself, with its clearly defined roadway and *trottoirs*, and its cool rows of trees; but it is still finer in its adaptation to the placing of monuments, either along its course or at either end, where distance furnishes axial vista and perspective.” It was this large sense of axial symmetry which Mr. Smith thinks “the most perfect product of the prolific reign of Louis XIV. and the true completion of the classic ideal.”

Playground Progress

THE August magazine number of *Charities and The Commons* (August 3) was devoted to City Playgrounds, containing most of the papers read at the Chicago convention in June. The number is thus exceedingly valuable to all officials charged with the construction or maintenance of municipal playgrounds. Of the various papers, perhaps the best for review is that of Henry S. Curtis, Secretary of the Playground Association of America, on the “Playground Progress and Tendencies of the Year.” As his year closed with the convention which gave to the movement its greatest impetus and its first conscious nationalism, another year will show far greater progress and statistics that are much more complete. Indeed, the gathering of statistics was his greatest difficulty. Out of a thousand cards sent to 150 cities, satisfactory replies came from only twenty-four cities. These places, however, ranged in population from 25,000 to 300,000, and were widely distributed. In two years the number of school playgrounds had increased in them 94 per cent., and of park and municipal playgrounds 48 per cent. The equipment and general efficiency of the playgrounds had been at least equally increased. A notable tendency of the year, says Mr. Curtis, was toward municipalization—that is, the support of the grounds by direct appropriation, instead of by private munificence, and the consequent public control of them. The appropriations were still for the most part inadequate, but they were significant as recognizing the place of the playgrounds in the city’s educational system. The example of New Jersey, in authorizing a playground commission of three members for each of the larger cities of the State—with power to select sites and, as money is appropriated, to purchase and conduct playgrounds—is noted as one likely to be followed by other States. He shows that there is a tendency to locate the playgrounds with a care similar to that which goes to the location of the public schools; he calls attention to the large number of playground associations that have been formed, and

of the spread of the movement to the smaller cities and in the South. He says: "The need of the smaller city is not much less than the need of the larger city, and it can secure the grounds for playgrounds very much more cheaply. One important use of the playground is for recreation, and the small city furnishes very many less opportunities for recreation than the large city. The playground perhaps serves its greatest social function, which is certainly one of its chief functions, in the country and in the small city."

Re-Planning Cities

IN the *Architectural Record* for August, Charles Mulford Robinson replies to an article recently published in that magazine, in which it was claimed that the movement to improve American cities in convenience and appearance was not making so very much headway, and nothing like the progress that the writing on the subject would suggest. He has a good theme, and takes it up with zest.

The original article cited the cases of Baltimore, San Francisco and New York as striking and typical failures to improve magnificent opportunities, in the case of the first two, and as an example of the lack of popular interest in the case of the latter—the report of New York's City Improvement Commission having fallen flat. It dismissed the success in Washington as largely owing to the influence of President Roosevelt; and, conceding success in Cleveland, it disposed of that as an exception. Mr. Robinson goes to some pains to explain why the cases of Baltimore, San Francisco and New York are not fair examples—but that, even so, Baltimore has realized to the full the ideals it had, the only trouble being that at the time of the fire the local municipal ideals were not as high as they are to-day. Then he calls in, for his defense, the examples of various other cities—a notable record, both in length and in work accomplished.

The writer of the preceding article had claimed that two enactments were necessary before civic improvement could amount to much in our cities. One would exclude elaborate street changes, such as involved in a re-planning of the city, from that municipal debt upon which a constitutional limit is placed; the other would permit the city to condemn not only the land actually necessary for a new street, but immediately adjoining property, in order that after improvements are effected the city, by the re-sale of this adjoining property at the enhanced value given by the improvements, might recoup the cost of making them. This is the device in familiar use in South America and in Europe in transforming cities. Public opinion, it was declared, would sanction neither of these changes until municipal government in the United States becomes better than it is. Mr. Robinson remarks that by sections 10 and 12 of the Ohio Municipal Code Law the latter authority has been already given to Ohio cities; that Pennsylvania at the last session of the Legislature conferred similar powers upon the cities of that State, and that the Connecticut Legislature, at its last session, gave this authority to Hartford.

Mr. Robinson points out that there are "four distinct steps of progression. First, there must come the talking

and writing on the general theme; then the specific application of the general principles to the case in hand—the answering of the query, 'What can we do to make our town better?' This answered, the third step is the financing of the project, and, last of all, comes its actual execution." It was claimed by the former writer that "seven or eight years" had passed since civic improvement began to be much written and talked about—and the fourth step, exclaims Mr. Robinson, not yet as conspicuous as the first! "But the cities that were the earliest to take the first step are now at the fourth; those which came next are at the third. There is hardly any community where the first step has not been taken, and the number that have taken the second—going to expense to secure professional advice—is admittedly very large."

Three-Cent Fares

MAYOR TOM. L. JOHNSON, of Cleveland, O., gives, succinctly and simply, in *The Independent* of August 8, his side of the three-cent fare enterprise in Cleveland. It is a story in which there is wide interest in other municipalities. For upwards of forty years, says Mayor Johnson, the street railroad interests of Ohio had been gradually bulwarking themselves behind an elaborate system of State laws, until their position seemed almost impregnable. At the very outset, moreover, in Cleveland six years ago, the Cleveland Electric Railway Company, which had a monopoly of the street railway business of the city, began "a campaign of commercial and financial persecution aimed to cripple the credit of the low-fare enterprise," in order to make difficult the construction of such roads. Thus it has been no easy contest. Johnson, to meet the attack on the credit of the enterprise, personally guaranteed in various cases the payment of its bills. He also guaranteed investors against loss by reason of investment, but he says that at no time did he own any stock in the road "or stand to make any profit out of its success." He could only lose if it failed, and this, he says, "is the extent of the so-called 'financial interest' which has been the basis of numerous injunctions brought by the Cleveland Electric Railway Company." Through the cleverness of the latter's lawyers, there has been six years of constant litigation. Yet "the old company has never won an important case in the court of last resort." Of course, political activity accompanied the various other campaigns. But Johnson has been three times elected, each time by a larger majority, and the last time he carried twenty-five out of the twenty-six wards. As to net results, he says that fifteen miles of new street railway have been constructed in Cleveland and are operated at a three-cent fare, with a promise of universal transfers on any lines to be built in future. The road has cost "\$50,000 a mile in an era of unprecedented high prices, as against a capitalization of \$150,000 a mile upon which the old company bases its estimates when it says that a three-cent fare will not produce reasonable dividends." The fight is still going on—politically, for Johnson is a candidate for re-election in November, and in the courts.

THE MUNICIPAL INDEX

In Which Are Listed and Classified by Subjects All Articles Treating of Municipal Topics Which Have Appeared During the Past Month in the Periodicals Listed Below

- Acetylene Journal, Chicago.
 Ainsley's Magazine, New York.
 American Academy of Political and Social Science, Annals, Philadelphia.
 American Architect, New York.
 American Banker, New York.
 American Gas Light Journal, New York.
 American Homes and Gardens, New York.
 American Institute of Architects, Bulletin, New York.
 American Institute of Electrical Engineers, New York.
 American Magazine, New York.
 American Society of Civil Engineers, Proceedings, New York.
 Appleton's Magazine, New York.
 Architects' and Builders' Journal, Baltimore.
 Architects' and Builders' Magazine, New York.
 Architectural Record, New York.
 Architectural Review, Boston.
 Arena, Trenton.
 Associated Engineering Societies, Journal, Boston.
 Atlantic Monthly, Boston.
 Brick, Chicago.
 Broadway Magazine, New York.
 Canadian Municipal Journal, Montreal.
 Cement, New York.
 Cement Age, New York.
 Century, New York.
 Charities, New York.
 Clay Record, Chicago.
 Clay Worker, Indianapolis.
 Collier's Weekly, New York.
 Construction News, New York.
 Consular-Reports, Washington.
 Contract Journal, London.
 Cosmopolitan, New York.
 Country Life in America, New York.
 Craftsman, New York.
 Department of Labor, Bulletin, Washington.
 Eclectic Magazine, New York.
 Electrical Railway Review, Chicago.
 Electrical Review, New York.
 Electrical World, New York.
 Engineer, Chicago.
 Engineer, London.
 Engineering-Contracting, New York.
 Engineering and Mining Journal, New York.
 Engineering Magazine, New York.
 Engineering News, New York.
 Engineering Record, New York.
 Engineering Review, New York.
 Engineering Soc'y of West. Penn., Pittsburg.
 Engineering World, Chicago.
 Engineers' Club, Proceedings, Philadelphia.
 Everybody's Magazine, New York.
 Far Eastern Review, Manila.
 Financier, New York.
 Fire and Water, New York.
 Fireman's Herald, New York.
 Forum, New York.
 Franklin Institute Journal, Philadelphia.
 Gardening, Chicago.
 Gesundheits Ingenieur, Munich.
 Good Roads, New York.
 Harper's Monthly, New York.
 Harper's Weekly, New York.
 House and Garden, Philadelphia.
 House Beautiful, Chicago.
 Illuminating Engineer, New York.
 Independent, New York.
 Indian and Eastern Engineer, Calcutta.
 Insurance Engineering, New York.
 Iron Age, New York.
 Journal of Accountancy, New York.
 Leslie's Weekly, New York.
 Literary Digest, New York.
 Local Government Journal, London.
 McClure's Magazine, New York.
 Manufacturers' Record, Baltimore.
 Metropolitan Magazine, New York.
 Moody Magazine, New York.
 Municipal Engineering, Indianapolis.
 Municipal Journal and Engineer, New York.
 Municipal Journal, London.
 Municipal World, St. Thomas, Ont.
 Munsey's Magazine, New York.
 New England Water Works Ass'n Journal, Boston.
 North American Review, New York.
 Outlook, New York.
 Pacific Monthly, Portland, Ore.
 Pacific Municipalities, Santa Clara, Cal.
 Park and Cemetery, Chicago.
 Pearson's Magazine, New York.
 People's Magazine, New York.
 Popular Science Monthly, New York.
 Power, New York.
 Preventive Medicine Journal, London.
 Progressive Age, New York.
 Public Health, London.
 Public Service, Chicago.
 Putnam's Magazine, New York.
 Review of Reviews, New York.
 Revista Municipal, Havana.
 Rock Products, Louisville.
 Sanitary Institute Journal, London.
 Scientific American, New York.
 Scribner's Magazine, New York.
 Smith's Magazine, New York.
 Street Railway Journal, New York.
 Suburban Life, Boston.
 Success, New York.
 Sunset, San Francisco.
 Surveyor, London.
 Technique Sanitaire, Paris.
 Times Magazine, New York.
 Tradesman, Chattanooga.
 Travel Magazine, New York.
 Van Norden's Magazine, New York.
 Village, Hyde Park, Mass.
 Water, London.
 Water and Gas Review, New York.
 World To-day, Chicago.
 Western Municipal News, Winnipeg.
 World's Work, New York.

ROADS AND PAVEMENTS

Brick Streets of Chicago.—Popular description. Illustrated. 2 pp. The Clay Worker, August.

Cement Filler for Brick Pavements. Specifications of the National Brick Manufacturers Association. Comments and illustrations. 5 pp. Municipal Engineering, August.

Asphalt Pavement on the Thames Embankment.—Description of its construction. Illustrated. 1 p. Engineering Record, August 24.

Improvements in Asphalt Pavements. Criticism of some recent reports. By F. E. Puffer. 1 p. Engineering Contracting, August 14.

Asphalt Repair Plant.—Description of plant of Kansas City Street Railway Co. 1-2 p. Municipal Journal and Engineer, August 7.

Municipal Asphalt Plant of Brooklyn. Description of plant recently completed. 3-4 p. Municipal Journal and Engineer, August 7.

Dust Suppression.—Discussion. By R. Welzel. 1-2 pp. Gesundheits Ingenieur, July 27.

Dust Prevention in Boston. Description of the experiments in the Boston parks. 1-2 p. Engineering Record, August 10.

Suppression of Dust on Roads. Paper before International Housing Con-

gress. By M. A. Mavazza. 1-4 pp. Revista Municipal, August 1-15.

"Fighting Dusty Roads", an account of various experiments. By Allerton S. Cushman, assistant director Office of Public Roads, U. S. Department of Agriculture. 2-4 pp. Illustrated. Country Life in America, August.

Tar Spraying Trials. Notes on the. By Fred W. Pearce. 1-2 p. Good Roads, August.

Oiled Roads in Kansas City.—Bulletin from the Park Commission. 1-2 p. Park and Cemetery, August.

Tar on Macadamized Roads. Extract from paper before Municipal and County Engineers. By Thomas Aitken. 3-4 p. Engineering News, August 22.

Tar on Roadways. Extract from paper before Institution of Gas Engineers (England). By H. P. Maybury. 1 p. Progressive Age, August 15.

Notes on Tar Macadam. Abstract of discussion before Municipal and County Engineers. By C. F. Wike. 2-3 p. Engineering News, August 8. 1 p. Engineering Record, August 10. 1-4 pp. Good Roads, August.

Paving Specifications and Inspection.—Advises expert service for these. By Francis P. Smith. 2 pp. Municipal Journal and Engineer, August 7.

Roadside Treatment.—Advantageous use of roadside trees. "The Kings Highway." By Reginald Ryves. Illustrated

4 1-2 pp. The Surveyor, August 9.

Road Making and Maintenance. By J. P. Jenkins. Illustrated. 2 pp. Contract Journal, August 14.

Testing Road Materials.—New machine for impact test of stones. Illustrated. 1-4 pp. Municipal Journal and Engineer, August 28.

Street Improvement in Mankato, Minn.—Illustrated. 2 pp. Municipal Engineering, August.

Street Paving in America.—Report of Committee on Street Paving of American Society of Municipal Improvements. 1-2 pp. The Surveyor, August 9.

Pavements of the Future, Will the paving materials of the present be used in the construction of. Informal discussion before American Soc. of Civil Engineers. By George W. Tillson. 3-4 p. Engineering News, August 1.

Sidewalks, Planning and Improving.—Address by Frederick L. Ford, City Engineer of Hartford. 1-2 pp. Park and Cemetery, August.

Sub-drainage Sidewalks. 1-2 p. Municipal Journal and Engineer, August 7.

SEWERAGE AND SANITATION

Sewerage of Great Crosby (England).—Illustrated. 1-2 pp. Contract Journal, July 24.

Project for Draining the City of Bad-Wildungen. Illustrated. 2 1-4 pp. Gesundheits Ingenieur, July 27.

Sewerage Details and Storm Water Discharge.—Designing the former and calculating the latter. By E. E. Wallington Butt. 1-2 p. Contract Journal, August 14. 10 pp. The Surveyor, August 2.

Sewer Construction, Atlantic City.—Driving sheeting with hydraulic jet pumping station, concrete pipe, etc. Illustrated. 1 3-4 pp. Engineering Record, August 24.

Sewer Outlet at Blackpool, England.—Method of laying three-foot steel sewer in the ocean. Illustrated. 2 pp. Contract Journal, August 14.

Laying Submerged Sewer. Description of work in Long Island Sound. Illustrated. 3-4 p. Municipal Journal and Engineer, August 7.

Cost of Sewer Construction.—Itemized cost of trenching, pipe laying and back filling at Centerville, Ia. 2 3-4 pp. Engineering and Contracting, August 21.

Sewer Pipes.—Cement vs. Clay Pipes. Editorial. 1-2 p. Water, August 15.

Steel Pipe Storm Sewers. Description of one built for Jersey City. Illustrated. 1 3-4 pp. Municipal Journal and Engineer, August 7.

Sewage Pumping Station, Chicago's 39th Street. Illustrated description of pumping plant, intercepting sewer, etc. 8 1-4 pp. The Engineer, August 1.

Purification of Sewage and Factory Waste. By E. Boulanger, of Pasteur Institute, Lille, France. 3 1-2 pp. Illustrated. American Homes and Gardens, August.

Ealing Sewage Works. Brief description. 1 1-4 pp. The Surveyor, August 9.

Sewage Disposal, By Biological Process. Paper. Institution of Civil Engineers. By John Duncan Watson. 1 p. Contract Journal, July 24. 1 1-4 pp. The Surveyor, July 26. 1-2 p. Engineering News, July 31.

Sewage Filters Compared. Synopsis of papers. By H. W. Clark, John Duncan Watson and George Adam Hart. Comparing sand contact and sprinkling filters. 3 1-4 pp. Municipal Journal and Engineer, August 14.

Effluent from Chemically Treated, Settled and Septic Sewage on Oxidizing Beds. Paper before Institution of Civil Engineers. By George Adam Hart. ½ p. Contract Journal, July 24. 1 p. The Surveyor, August 2.

Sewage Experiments at Matunga, Bombay, made by C. C. James. Illustrated. By Gilbert J. Fowler. 1 1-4 pp. Engineering News, August 8.

Sewage Disposal Scheme for Pretoria, South Africa. Objections to, discussed. 1-2 p. The Surveyor, August 2.

Sewage Disposal at Cupar, Fife. Description of plant containing septic tanks and aerating bacteria filters. 1 p. The Surveyor, July 26.

Sewage Disposal at Hanley, England. Description of septic tank and bacteria bed plant. Illustrated. 3 pp. The Surveyor, July 26.

Bacterial Sewage Purification Scheme at Leicester. 2-3 p. Contract Journal, July 31.

Management of Sewage Disposal Plants. Paper before Assn. of Managers of Sewage Disposal Works. By W. H. Grieves. 3-4 p. Contract Journal, July 31.

Detritus Sewage Tanks. Illustrated. description of English design. 1-2 p. Municipal Journal and Engineer, August 7.

Trade Wastes of Reading, Pa.—Report on the disposal of. 2-3 p. Engineering News, August 22.

Pollution of Streams by Mill Wastes.—Mass. Position Regarding Decision of Mass. Supreme Judicial Court in Parker vs. American Woolen Co. 1 p. Engineering Record, August 10.

Industrial Pollution of Public Waters. Editorial discussion. 1-2 p. Municipal Journal and Engineer, August 28.

Sewage Polluted Rivers and Typhoid Fever in New York State. The New York "Herald" campaign against. 1-2 p. Leslie's Weekly, August 1.

River Flushing Plants at Milwaukee.—Illustrated description of Menomonee Valley, Milwaukee River and Kinickinick River flushing plant. 1 3-4 pp. Engineering News, August 1.

Typhoid Fever at Washington, D. C.—During First Half of 1907. 1-4 p. Engineering News, August 1.

Milk Supply, the City Safeguarding Its.—By Hollis Godfrey. 8 1-2 pp. The Atlantic Monthly, August.

Safeguarding Milk Supplies. Review of magazine articles. 1-3 p. Municipal Journal and Engineer, August 7.

Sanitary Code of Montclair, N. J.—Full text of the code. 3 1-2 pp. Engineering News, August 22.

Road Locomotion and Public Health. Noise and dust from a sanitary point of view. By H. S. Hele-Shaw. 8 pp. Journal of Royal Institute of Public Health, August.

WATER SUPPLY

Ground Water Supply.—Report on obtaining such for Muscatine, Ia. By Wynkoop Kiersted. Abstracted and discussed. 3-4 p. Engineering Record, August 3.

Water from Underground Caverns. Description of conditions in Missouri. Illustrated. 3-4 p. Municipal Journal and Engineer, August 28.

Artesian Bored Tube Wells, Water Supplies by Means of. Paper before Institution of Mining Engineers. By Herbert F. Broadhurst. 2 1-2 pp. Water, August 15.

Inter-relation of Deep Wells. An instance described. Illustrated. 1-2 p. Municipal Journal and Engineer, August 21.

New Water Supply of Mexico City. Brief description of supply from springs. 2-3 p. Engineering Record, August 3.

Arid Countries, Obtaining Water in.—Discussion of various methods employed. By Hermann Haedicke. 4 pp. Gesundheits Ingenieur, August 3.

Stripping Reservoir Sites.—Abstract of report of Hazen & Fuller on this subject. 2 pp. Municipal Journal and Engineer, August 7.

Filtration vs. Stripping Reservoirs. Editorial discussion. 1-2 p. Municipal Journal and Engineer, August 7.

Ashokan Reservoir of New York City Water Supply.—Brief illustrated description of dams. 1 p. Engineering Contracting, July 31.

Ashokan Reservoir, New York City Water Supply. Extract from the specifications and plans. Illustrated. 2 pp. Engineering News, August 1.

Concrete Reinforced Dam.—Description of raising and buttressing Beacon reservoir, N. Y. Illustrated. 1 1-2 pp. Engineering Record, August 24.

Water Towers at Aldershot (England).—Thirty-two foot steel tank on steel tower. Illustrated. 1-2 p. Contract Journal, July 31.

Reinforced Concrete Water Tower at Anaheim, Cal. 175,000-gallon tank on 60-foot tower. Illustrated. 1 1-4 pp. Engineering Record, August 24.

Water Mains, Reinforced Concrete.—The Bonna system described. 1 p. Water, August 15.

Cast Iron Pipe. Capacity, size, capitalization, etc., of U. S. C. I. Pipe & Foundry Co. 1-2 p. The Iron Age, August 15.

Flexible Water Pipe for Sub-aqueous Conduit. Description of German invention. Illustrated. 1-4 p. Engineering News, August 22.

Repairing Aqueduct Lining.—Repairs to limestone concrete aqueduct damaged by soft water. Abstract of paper before Institution of Civil Engineers. By M. R. Barnett. Illustrated. 1 p. Engineering News, August 8.

Water Purification Plant at Exeter, N. H.—Description of mechanical filter plant recently completed. By Robert Spurr Weston. Illustrated. 2 3-4 pp. Engineering News, August 8.

Purification of Water by Storage. Editorial. 1-2 p. Water, August 15.

Experiment with a Jewell Filter at Posen. By E. A. Gieseler. 1 2-3 pp. Engineering Record, August 10.

Aluminum Silicate for Improving Water. By R. Gans. 1 p. Gesundheit Ingenieur, August 10.

Importance of Carbon Dioxide on Water Supplies. By Hartwig Klut. 7 pp. Gesundheits Ingenieur, August 10.

Water Hardening.—Description of process for removing lead dissolving properties. Paper before Institution of Civil Engineers. By James Watson. 3-4 p. Contract Journal, July 24.

Water Softening.—General discussion before Institution of Civil Engineers. By William Matthews. 1-2 p. Contract Journal, July 24.

Pollution of Underground Waters, Detecting and Tracing the Source of.—Abstract of paper before British Assoc. of Water Works Engineers. 1-2 p. By John C. Thresh. Engineering News, August 1.

Water Works Situation at Atlanta, Ga.—Discussion of responsibility for inefficient plant and supply. 1-2 p. Engineering Record, August 3.

Oriental Water Works. Some notes on. Paper before American Water Works Assoc. By George H. Johnson. 3 pp. Engineering Record, August 24.

Metropolitan Water Supply System. Description of reservoirs, aqueducts and pumping stations supplying Boston and vicinity. Illustrated. By Caleb M. Saville. 4 1-2 pp. Municipal Engineering, August.

Water Works Construction in America.—Paper before Society of Engineers. By E. R. Matthews. Illustrated. 6 1-2 pp. Water, August 15.

Water Consumption, Waste and Meter Rates.—Paper before American Water Works Association. By James L. Tighe. 3 3-4 pp. Water and Gas Review, August.

Centrifugal Pumps.—Types of pumps and their construction. Illustrated. By William O. Webber. 2 1-2 pp. The Engineer, August 1.

Reinforced Concrete Pipe for carrying water under pressure. Paper before American Society of Civil Engineers giving history, methods of construction, cost, permeability, etc., of 5'3" pipe. By Chester W. Smith. Illustrated. 19 pp. Proceedings Am. Soc. of Civil Engineers, August.

STREET LIGHTING AND ELECTRIC POWER

"Private vs. Public Operation of Gas Companies."—An argument in favor of the former. By Lucien H. Tyng. 3 pp. Moody's Magazine, August.

Municipal Lighting in Canada.—Comparative statement of municipal and private plants. 1-3 p. Municipal Journal and Engineer, August 7.

Municipal Electric Lighting. Relation between municipal and private plants. Statistics and discussion. By Ernest S. Bradford. 4 pp. Municipal Journal and Engineer, August 21.

Gas Lighting of Streets.—Brief discussion before Natural Gas Association of America. 2-3 p. Progressive Age, August 15.

Gas Arc Maintenance. Discussion of methods and results before Iowa District Gas Association. By J. C. Grey. With discussion. 4 pp. Progressive Age, August 1.

Use of Gas from a Hygienic Standpoint. Paper before British Institution of Gas Engineers. By Prof. Vivian B. Lewes. 4 pp. American Gas Light Journal, August 5.

Municipal Gas Lighting Plants.—Comparison of municipal and private plants in the U. S. Statistics presented and discussed. 3 1-2 pp. Municipal Journal and Engineer, August 28.

Candle Power Standards for Gas, the Present Status of.—Paper before Illuminating Engineering Society. By C. H. Stone. 5 1-2 pp. Illuminating Engineer, August. 2 3-4 pp. Am. Gas Light Journal, August 5.

Lamp Heads.—Description of New York City's latest design. Illustrated. 1 p. Municipal Journal and Engineer, August 21.

Electrolysis of Gas Mains.—Brief discussion before Natural Gas Association of America. 2-3 p. Progressive Age, August 15.

Light Standards, Primary, Secondary and Working.—1 3-4 pp. American Gas Light Journal, August 12.

Municipal Electric Lighting Plant.—Discussion of the discontinuance of New York's. 1-2 p. Electrical Review, August 24.

Costs of Electricity Supply and Their Relation to Scales of Charges.—Abstract of paper before Municipal Electrical Association, Great Britain. By H. R. Burnett. Full analysis of cost items for various classes of current users. 1 1-3 pp. Electrical Review, August 3.

Street Lighting from Buffalo to San Francisco. Illustrated, 4 pp. Illuminating Engineer, August.

London's Electric Light and Power. Illustrated description of central station. 2 3/4 pp. Electrical Review, August 3.

Outdoor Lighting in Lincoln, Neb. Illustrated. 3 1/2 pp. Illuminating Engineer, August.

Conduits for Electric Wires. Description of materials and methods in use. Illustrated. 1 p. Municipal Journal and Engineer, August 28.

Photometry and Lamps. Part of standardization rules of an American Institute of Electrical Engineers, briefly describing terms, etc. 1 1/4 pp. Proceedings of American Institute of Electrical Engineers, July.

Illuminating Engineering. Concepts and Terminology of. Presidential address before Illuminating Engineer's Society, by Dr. Clayton H. Sharp. 3 3/4 pp. Electrical Review, August 10.

FIRE AND POLICE

Patrol System in Cleveland.—Extracts from paper by Harris R. Cooley, Director of Public Service in Cleveland, at National Conference of Charities and Correction. 1 p. Charities and The Commons, August 24.

Urban Police. By Edwardo Colon. 1/2 p. Revista Municipal, August 15.

History of the Police in Ancient and Modern Times. Translation of treaties by M. L. F. Field, in the Municipal Journal and Engineer (continued). 1 1/2 pp. Revista Municipal, August 15.

Dogs and Policemen. Brief account of such use in Ghent. 1/3 p. Municipal Journal and Engineer, August 7.

Juvenile Court, New, of Denver. By Judge Ben. B. Lindsey. 1 1/2 pp. Charities and The Commons, August 3.

First Building for Juvenile Court. An account of the new structure in Chicago. 1 p. Charities and The Commons, August 17.

Juvenile Delinquents. Statistics. Editorial. 2 pp. Charities and The Commons, August 17.

Juvenile Courts in America. Chapter VII. Impressions of American Charity, by Emil Muensterberg, of Berlin. 5 pp. Charities and The Commons, August 10.

High-Pressure System for Fire Protection.—Brief statement and table giving data concerning such system in twenty-one U. S. cities. 1 p. Municipal Journal and Engineer, August 7.

High-Pressure Fire Service System, New York's. Illustrated description. 16 pp. Insurance Engineering, August.

Fire-Hose Test.—Details of test at New Bedford, Mass. 1/4 p. Municipal Journal and Engineer, August 21.

Overhead Wires, the Menace of. Description of conditions and summaries of Fire Underwriters' report. Illustrated. 19 pp. Insurance Engineering, August.

GOVERNMENT AND FINANCE

Des Moines Commission Plan. Editorial. 1 p. The Outlook, August 3.

The Same. Editorial. 1/2 p. The World To-Day, August.

"Efficient Municipal Government, How to Keep"—Accurate and Constant Popular Knowledge More Effective than Fitful Reforms. By William H. Allen, Secretary Bureau of Municipal Research, New York. 4 pp. The World's Work, August.

National Politics as Affecting Municipal: "The Slavery of the Cities." Editorial. 1 1/2 pp. The Outlook, August 24.

Public Utilities Law of Wisconsin. Discussion of the Wisconsin legislation of 1907. By John R. Commons. 4 pp. The Review of Reviews, August.

San Francisco, Its Regeneration.—A hopeful description of conditions and progress. By Colvin B. Brown. 6 1/2 pp. Illustrated. The Review of Reviews, August.

The Liberating of San Francisco. Three Parts: I.—Introduction, by Edward H. Hamilton; 2 1/2 pp.; illustrated. II.—"The Story of the Great Struggle," by William H. Langdon, District Attorney; 4 1/2 pp. III.—"A Review of the Battle," by Joseph J. Dwyer; 3 pp. Cosmopolitan, August.

Initiative and Referendum. The Portland Election. "Initiative on Trial." Editorial. 1/2 p. The Outlook, August 24.

Municipal Ownership and the Civic Federation. By Prof. John R. Commons, a member of the Commission which went to Europe. 2 1/2 pp. Portrait. The Independent, August 1.

The Same. Editorial. 1/2 p. Collier's Weekly, August 10.

Municipal Ownership. Final Report by Civic Federation Commission; Abstract and Synopsis. 1 1/4 pp., Electric Railway Review, August 3; 1 3/3 pp., Electrical Review, August 3; 3/4 p., Engineering Record, August 3.

Municipal Ownership and Operation. Synopsis of Report of the National Civic Federation Commission. 6 pp. Municipal Engineering, August. Canadian Municipal Journal, August.

Public Ownership Report. Synopsis of Report of National Civic Federation Commission. 3/4 p. Municipal Journal and Engineer, August 21.

Municipal Bond Sales.—Table of sales during June. 1 p. Municipal Journal and Engineer, August 7.

Assessments for Sewers in Massachusetts Towns.—Table, prepared by E. Worthington. 1/3 p. Municipal Journal and Engineer, August 7.

Connecticut Assessments and Tax Rates. Synopsis of statistics of all Connecticut towns. 1/2 p. Municipal Journal and Engineer, August 14.

REFUSE COLLECTION

AND DISPOSAL

Street Cleaning and Refuse Collection.—Recommendations for Cincinnati department. 1/2 p. Municipal Journal and Engineer, August 14.

"Street Cleaning Difficulties in New York." By B. Ogden Chisolm. 4 1/2 pp. Illustrated. Charities and The Commons, August 17.

Snow Removal in English Cities.—Table giving details of method, organization, etc., in nineteen English cities. 3/4 p. Contract Journal, July 31.

City Wastes in Rochester.—1/2 p. Municipal Journal and Engineer, August 7.

Disposal of Municipal Waste.—Description of portable crematories. By W. F. Morse. Illustrated. 4 pp. Municipal Journal and Engineer, August 7.

Destructor Plants for Public Lighting, Alleged Failure by New York's. 1/2 p. Gas Light Journal, August 26.

Testing a Garbage Cremator. Outline of proposed test. 1/4 p. Municipal Journal and Engineer, August 14.

Reports on Garbage, Refuse and Sewage Disposal. By R. H. Thomson, City Engineer of Seattle. 1 p. Engineering News, August 22.

PARKS AND CITY BEAUTY

Parks, Notes of Chicago.—1 p. Illustrated. Gardening, August 1.

Utilization of Parks by Schools: "A Better Chance for Children of the Slums." By President Charles W. Eliot, 1 1/2 pp. The Outlook, August 10.

Needs of Central Park, New York. 1/2 p. Park and Cemetery, August.

Park Improvement Notes. 1 p. Illustrated. Park and Cemetery, August.

Playgrounds.—Papers of the National Convention at Chicago, in June. Special "Play Number" of Charities and The Commons, August 3. The more important papers include:

The Year's Progress and Tendencies in Playgrounds. By Henry S. Curtis, Secretary Playground Association of America. 5 pp. Charities and The Commons, August 3.

How to Secure a Playground. By Mrs. Samuel Ammon, Treasurer Pittsburg Playground Association. 5 pp. Charities and The Commons, August 3.

Playgrounds as Preventatives of Tuberculosis. By Henry Baird Favill. 6 pp. Charities and The Commons, August 3.

Social Value of Playgrounds in Crowded Districts. By Lawrence Veiller. 3½ pp. Charities and The Commons, August 3.

Recreations Centers of New York. By Seth T. Stewart, District Superintendent Department of Education. 2 pp. Charities and The Commons, August 3.

Field Houses of Chicago and Their Possibilities. By Mary E. McDowell. 3 pp. and 16 full-page illustrations. Charities and The Commons, August 3.

How to Manage Municipal Play Centers. By Royal Loren Melendy. 3 pp. Charities and The Commons, August 3.

The Chicago Playgrounds: "The School of the Small Park." By Martha S. Bensley. 8 pp. Illustrated. Appleton's, August.

Playground Tidings and Recommendations. 1 p. Charities and The Commons, August 17.

Paris, Remaking of.—"Baron Haussmann and the Topographical Transformation of Paris Under Napoleon III." By Edward R. Smith. 13 pp. Illustrated. The Architectural Record, August.

Planning of Villages and Towns.—"Plan the Village Carefully." The reason for and the requirements. 1 p. The Village, August.

"Urban Planning." Extracts from a paper by Prof. Reilly, Director Architectural School of University of Liverpool, at "City Beautiful" Congress, Liverpool, June 27. 2 pp. American Architect, August 17.

"Design as Applied to Cities." By Samuel Parsons and W. Rudolf O'Donovan. 7 pp. The North American Review, August 16.

Village Civic Centers.—Editorial. ½ p. Municipal Journal and Engineer, August 14.

Beauty for Public Works and Places, an Appeal for.—Editorial. ½ p. The World's Work, August.

Signs a Detriment to Architectural Effects.—Editorial. ¾ p. The American Architect and Building News, August 24.

Boston's Fenway, an Educational Center.—By Sylvester Baxter. 14 pp. Illustrated. The Outlook, August 24.

TRAFFIC AND TRANSPORTATION

Municipal Transportation in Europe.—Reports concerning cabs and cars in Milan, Liverpool, Birmingham, Manchester and London. By J. E. Dunning, U.S. Consul at Milan. 4 pp. Daily Consular and Trade Reports, August 30.

Broadway Franchise Deal, Story of the First.—Part of article, "Where Did You Get It, Gentlemen?" by Charles Edward Russell. 2 pp. Everybody's, August.

Philadelphia Transit Agreement.—Editorial. ¾ p. The Outlook, August 3.

Rapid Transit Franchise in Philadelphia. Synopsis and discussion of the new franchise. 1¼ pp. Electric Railway Review, August 24.

Railroad Stations, the Dramatic Aspect of: "The Gates of the City."—By Jesse Lynch Williams. 13½ pp. Illustrated. The Century, August.

"Three-Cent Fares in Cleveland."—By Tom L. Johnson, Mayor. 1½ pp. The Independent, August 8.

Motor Cabs and Busses, Success of, in London and Paris: "A New Relief of City Traffic."—By Harry W. Perry. 2 pp. The World's Work, August.

Over-crowding Financially Necessary on the New York Elevated: "The Necess-

sary Strap-hanger."—Editorial. By Samuel E. Moffett. ¼ p. Collier's Weekly, August 24.

Transit Inquiry in New York.—Investigation by Public Service Commission. 1½ pp. Street Railway Journal, August 24.

Interurban Railway Development Near Milwaukee.—Description of routes, methods, etc., with map and other illustrations. 9½ pp. Street Railway Journal, August 3.

Indianapolis Trolley Systems.—½ p. Municipal Journal and Engineer, August 7.

Tramway Wear and Maintenance.—Paper before Municipal and County Engineers. By C. F. Wike. Illustrated. 4½ pp. The Surveyor, July 26.

MISCELLANEOUS

Civic Improvement, Notes and Comments on Current News of.—3 pp. The Architectural Record, August.

Notes on: "The Civic Awakening." 1¼ pp. Park and Cemetery, August.

News Notes on. 2½ pp. Charities and The Commons, August 17.

A reply to article criticising amount of work actually done. By Charles Mulford Robinson. 4 pp. The Architectural Record, August.

Town Improvement in the Middle West. Editorial. ½ p. Collier's Weekly, August 24.

Improvement of Ogdensburg, N. Y. ½ p. Park and Cemetery, August.

"Civic Philistinism"—What It Is and How to Overcome It. By Edward T. Hartman, Secretary Massachusetts Civic League. 1 p. The Village, August.

Village Improvement and Improvement Societies, Notes on. Edited by Edward T. Hartman. 2 pp. The Village, August.

Rebuilding Dio de Janeiro.—½ p. Municipal Journal and Engineer, August 7.

Billboards, Forbidden in Germany.—Report of Consul-General A. W. Thackara. ½ p. The Village, August.

Outdoor Advertising in Brazil. Brief description of methods. By Consul-General George E. Anderson. 2 pp. Daily Consular and Trade Reports, August 24.

Poll of College Classes on Billboard Sentiment: "A Statistician's Statistics." Editorial. ½ p. The Village, August.

Campaign by an Improvement Club of Tacoma: "The Crux of the Billboard Question." By Clinton Rogers Woodruff. 1 p. The Independent, August 15.

The Humorous Side of. By "The Spectator." 2 pp. The Outlook, August 24.

Descriptions of Cities and Towns.—"Newport Cottages and Gardens." By Elizabeth Odgers Toombs. 9 pp. Illustrated. Munsey's, August.

Siena, Italy, Its Art and Architecture. II. and III. of series of articles by Honoré Meru. 9½ pp. American Architect and Building News, August 3, 24.

"A Typical French Town" and Its Social Lessons for Strenuous America. By Alvan F. Sanborn. 11 pp. Illustrated. Putnam's Monthly, August.

Cities of Washington and Oregon: "The Pacific Northwest." By E. W. Wright. 30 pp. Illustrated. Sunset Magazine, August.

Portland, Ore.: "A Goal for Young Men." By C. C. Chapman. 11 pp. Illustrated. Sunset Magazine, August.

Hyde Park, Mass. 5 pp. Illustrated. The Village, August.

Chevy Chase, a Washington Suburb.

By John R. Bowie. 1 p. Illustrated. The Village, August.

Unadilla, N. Y.: "A 'Pleasant Valley' Village." By Jeanette N. Phillips. 3 pp. Illustrated. The Village, August.

Dallas and Fort Worth, Texas: "The Twin Cities of North Texas." By Frank Putnam. 13 pp. Illustrated. New England Magazine, August.

Garden Cities, Idea of.—Extracts from Howard's "Social Progress." 2 pp. The Village, August.

Public Comfort Stations.—Results of an investigation in Chicago to show need of. ½ p. Charities and The Commons, August 10.

Public Baths.—Data concerning those in London and its suburbs. 2 pp. Contract Journal, July 24.

Public Baths. Brief, illustrated statements. By C. J. Fox. 2¼ pp. Engineering Review, August.

Urban Cottages and Small Homesteads.—Letchworth, Garden City Estate. Illustrated description. 1¾ pp. Municipal Journal, July 19, 26.

Smokeless Cities, Electricity as an Agent Towards.—½ p. Electrical Review, August 10.

Smoke Nuisance, Work Against in Chicago and Detroit.—½ p. Charities and The Commons, August 10.

German Municipal Methods.—City planning, street improvement, etc. ¼ p. Municipal Journal and Engineer, August 28.

Village Hall, Bronxville and Its.—Illustrated description. 2 pp. Municipal Journal and Engineer, August 14.

Cost Keeping and Recording.—A simple system of keeping and recording engineering costs. By Magee Fisher. 2 pp. Engineering Contracting, August 14.

Bids Received, Data Concerning.—Correspondence and editorial discussing method of presentation. 1½ pp. Municipal Journal and Engineer, August 28.

Enforcements of Specifications. Presidential address before American Society for Testing Materials. By Dr. Charles B. Dudley. 16 pp. Chemical Engineer, July.

Telephone Franchise Positions Proposed for New York City. 1½ pp. Municipal Journal and Engineer, August 7.

Excavating Machinery.—Trench diggers and road graders rescribed. By Frank C. Perkins. 2 pp. Municipal Engineering, August.

City Bench Monuments of Chicago.—Brief history and description of present standard. ¾ p. Engineering Contracting, July 31.

Automobile Ambulances in London.—¾ p. Revista Municipal, August 1.

Concrete Telegraph Poles.—Report of tests made on these. Papers before American Society for Testing Materials. By G. A. Cellar and Robert A. Cummings. Illustrated. 20 pp. Cement Age, August.

Charity, Public and Private in Minneapolis, as advanced by the recent National conference.—Editorial. 1 p. Charities and The Commons, August 24.

Suburbs: "Suburban Homes of Long Island."—By H. W. Mathews. 2½ pp. Illustrated. Suburban Life, August.

Madison Square, New York: "Moods of a City Square."—By E. S. Martin. 9 pp. Illustrated. Harper's Monthly, August.

Cost of Steam and Hydro-Electric Power.—Comparison of the costs, based on the records of actual plants and flow of New England streams. Illustrated. By William O. Webber. 5 pp. Engineering Magazine, September.

NEWS OF THE SOCIETIES

American Bar Association.—The thirtieth annual meeting was opened at Portland, Me., August 26. Former Chief Judge Alton B. Parker, of the New York State Court of Appeals, president of the association, in his address pointed out the most noteworthy changes that had taken place in statute law throughout the different States during the past year. Ambassador James Bryce, of England, delivered the principal address of the meeting. His subject was "The Influence of the National Character and Historical Environments on the Development of the Common Law." The report of the Standing Committee on Insurance Law, prepared by special order of the last annual convention, was presented by Ralph W. Breckinridge, of Omaha, chairman. The recommendations were as follows:

That this association disapproves and condemns the prevalent custom, which makes State insurance commissionerships political prizes to be distributed as such without regard to fitness or knowledge of the insurance business.

That all companies created under the laws of foreign countries be required to make a deposit in at least one of the States before transacting business anywhere in the United States.

The repeal of the valued policy laws.

The creation in each State of the office of fire marshal.

The enactment of a Federal statute forbidding the use of the mails to persons, associations, copartnerships, or corporations conducting any kind of insurance business in the United States, who are not licensed to transact such business by the State wherein such persons, associations, copartnerships or corporations are domiciled, or under whose laws any such corporations are credited.

The apportionment and contingent distribution of the deferred dividend surplus on existing life policies of all companies as a condition precedent to the transaction of business outside of the home States of the several companies.

International Law Association.—The meeting was opened at Portland, Me., August 29, and continued three days. Many distinguished members of the bar, jurists and publicists from the United States and a large number of foreign countries were present. The association was organized at Brussels in 1873 for the advancement of international arbitration. Twenty delegates attended from England alone. Sir Frederick Pollock, accompanied by nine others, arrived at Boston from England August 23.

Wisconsin Paid Firemen's Association.—At the annual meeting at Oshkosh, August 20, it was decided to incorporate the association without capital stock, and an amendment was adopted which will permit members of the part paid and volunteer fire departments to become members. It was also decided that the various relief associations of the State interfered with the new pension law, and the association goes on record as recommending the abolition of relief associations, in order to make the pension law more effective.

The following officers were elected: President, Robert A. Brauer, Oshkosh; vice-president, James Cape, Jr., Racine; secretary, F. J. Colton, La Crosse, re-elected; treasurer, J. H. Kratze, Manitowoc, re-elected.

National Irrigation Congress.—The Congress opened at Sacramento, Cal., September 2, and will remain in session until September 7. The four primary objects of the Congress are "to save the forests, store the floods, reclaim the deserts and make homes on the land." It is being attended by engineers, foresters, National and State officials, business men,

editors, etc. Simultaneously with the Congress there will be held at Sacramento an interstate exposition of irrigated land products and forest products. A trip will be made to San Francisco to inspect the rebuilding of that city.

New York State Firemen's Association.—The thirty-fifth annual convention was held August 20, 21, 22, 23, at Elmira, N. Y. An elaborate programme was carried out, and special precautions were taken by the police to safeguard the visitors.

Calendar of Meetings

September 5-7.

National Firemen's Association.—Convention, Oklahoma, Okla.—Peter J. McCarthy, Secretary, Box 600, St. Louis, Mo.

September 10-12.

League of Third Class Cities of Pennsylvania.—Convention, McKeesport, Pa.—Edward C. Charlton, Secretary, Bradford, Pa.

September 10-12.

Association of Edison Illuminating Companies.—Annual convention, Hot Springs, Va.—S. C. Mumford, Assistant Secretary, Detroit, Mich.

September 11-13.

New England Water Works Association.—Annual convention, Springfield, Mass.—William Kent, Secretary, Narragansett Pier, R. I.—Office, Tremont Temple, Boston, Mass.

September 13-14.

Mayors' Association of Illinois.—Second annual meeting, Bloomington, Ill.—Ex-Mayor McCastrin, Rock Island, Ill.

September 17-19.

National Association of Controllers and Accounting Officers.—Second annual convention, Hotel Jefferson, Richmond, Va.—Howard C. Beck, Secretary, Detroit, Mich.

September 17-19.

League of Iowa Municipalities.—Tenth annual convention, Council Bluffs, Iowa.—T. G. Pierce, Secretary, Marshalltown, Ia.

September 18-20.

Michigan Gas Association.—Sixteenth annual meeting, Battle Creek, Mich.—Alonzo P. Ewing, Secretary.

September 18-20.

League of American Municipalities.—Annual convention, Jamestown Exposition, John MacVicar, Secretary, Des Moines, Ia.

September 23-28.

National Irrigation Congress.—Fifteenth annual convention, Sacramento, Cal.

September 30-October 4.

American Public Health Association.—Thirty-fifth annual meeting, Atlantic City, N. J.—Dr. Charles O. Probst, Secretary, Columbus, O.

October 1-4.

American Society of Municipal Improvements.—Annual convention, Detroit, Mich.—George W. Tillson, Secretary, 831 Ocean avenue, Brooklyn, N. Y.

October 8-11.

International Association of Fire Engineers.—Thirty-fifth Annual Convention, Washington, D. C.—James McFall, Secretary, Roanoke, Va.

October 10-12.

American Electro-Chemical Society.—Fall meeting, Chemists' Club, 108 West 55th street, New York City.—Dr. Joseph W. Richards, Lehigh University, South Bethlehem, Pa.

October 14-16.

American Street and Interurban Railway Engineering Association.—Annual convention, Atlantic City, N. J.—S. W. Mower, Secretary, Southwestern Traction Co., London, Ont.

October 14-18.

American Street and Interurban Railway Association.—Annual convention, Atlantic City, N. J.—B. V. Swenson, Secretary, Engineering Societies Building, 33 West Thirty-ninth street, New York

October 15-17.

Association of Railway Superintendents of Bridges and Buildings.—Annual meeting, Milwaukee, Wis.—S. F. Patterson, Secretary, Concord, N. H.

October 16-18.

American Gas Institute.—Second annual meeting, Washington, D. C.—Jas. W. Dunbar, Secretary, New Albany, Ind.

November 12.

National Tax Association.—Conference, Columbus, O.

November 19.

National Municipal League.—Annual convention, Providence, R. I. (in conjunction with the American Civic Association).—Clinton Rogers Woodruff, Secretary, North American Building, Philadelphia, Pa.

PERSONALS

ABBOTT, CAPT., SAMUEL, New Bedford, Mass., one of the best known veteran firemen of New England, died recently, aged eighty-four years; he was the father of Samuel Abbott, Jr., Superintendent of the Protective Department, of Boston, and President of the Massachusetts State Firemen's Association.

HARRISON, STUART, Chairman of the Board of Trade Committee of Fort Worth, Tex., to arrange for the construction of an interurban railway from Fort Worth to Mineral Wells, has been over the route and states that with the exception of \$10,000, which will be secured with little delay, ample funds have been secured and other arrangements perfected for the proposed road.

KELLOGG, GEORGE M., Chief of the Fire Department of Sioux City, Ia., was recently surprised with a handsome gold badge by members of the Department as a mark of appreciation of his eighteen years' service as Chief; the presentation was made by City Electrician Prevost in the presence of Assistant Chief Pecaut and Captains William Brady, Frank Kellogg, Milt Hartman, William Dagle, Phil Gienke, Michael Walsh, Frank Lawrence and Ed Roth.

OGDEN, PROF. CHARLES E., Instructor in Sanitary Science at Cornell University, will investigate conditions at Thomas Creek by direction of Eugene Porter, Commissioner of the Health Department of the State of New York, on complaint of A. Emerson Babcock, Chairman of the Town Board of Brighton, who charges that the stream is in a most unsanitary condition from pollution of the sewage of the city of Syracuse.

RANDOLPH, ISHAM M., Am.Soc.C.E., who resigned recently as Chief Engineer of the Chicago Drainage Board, and is now Consulting Engineer to the Board, has opened an office in the American Trust & Savings Bank Building, Chicago, Ill.

WALKER, S. H., Mayor of Altoona, Pa., with Mrs. Walker, has returned from a visit to his mother at Mechanicsburg and also Richmond, Va., where he was the guest of his brother-in-law, C. W. Culp, General Superintendent of the Richmond, Fredericksburg and Potomac Railroad, who formerly lived in Altoona.

YOUNGMAN, B. E., City Engineer of Hazleton, with Mrs. Youngman, recently attended the convention of the Knights of Pythias at Philadelphia and also spent some time at Atlantic City.

HUGHES, CHARLES E., Governor of New York, has recommended the following appointments:

Members of New York City Charter Revision Commission.—Former City Chamberlain E. R. L. Gould, former Senator N. A. Elsberg, George L. Duval, of the Merchants' Association, and Charles H. Strong, of the City Club, all residents of New York City.

Delegates to the National Conference for the Consideration of State and Local Taxation at Columbus, Ohio, November 12.—Egbert Woodbury, of Jamestown, President State Board of Tax Commissioners; Lawson Purdy, President New York City Board of Tax Commissioners, and Professor Edwin R. A. Seligman, of Columbia University.

Delegates to the annual meeting of the National Prison Association at Chicago, September 14.—Dr. Charles F. Howard, Buffalo, President State Prison Commission; Superintendent of State Prisons Cornelius V. Collins, of Troy; Frank B. Hornbeek, of Ellenville; Joseph F. Scott, of Elmira, and Homer Folks, of Yonkers.

Delegates of the Trust Conference of the National Civic Federation at Chicago, October 22.—Former Mayor Seth Low, Dr. Nicholas Murray Butler, Samuel Gompers, the Reverend Dr. Lyman Abbott, Dr. Albert Shaw, Herman Ridder, Richard Watson Gilder, Isaac N. Seligman, Hamilton Holt, James B. Reynolds, all of New York City; Professor J. W. Jenks, of Cornell University; C. E. Emmons, of Schenectady; F. R. Hazard, of Syracuse, and Grange Sard, of Albany.

LEGAL NEWS

A Summary and Notes of Recent Decisions—Rulings of Municipal Interest

ACCOUNTING FOR STATE POLICE TAXES

State ex rel. Hubert vs. Mayor, etc., of City of New Orleans.—Contracts result from agreements, express or implied, and not from proceedings in invitum, whether legislative or judicial; and the fact that the State organized a metropolitan police and created a board for its governance, with authority to demand and receive from the city of New Orleans certain taxes, to be levied and collected by the city for the maintenance of such police, "imposed" no contract and no obligation upon the city which the board can enforce, by any right of its own, or for any use or purpose beyond that for which it was created. Hence, the State having abolished both the police and the board, the functions of the latter ceased with its existence, and the only standing which a receiver could have in a proceeding to compel the city to levy a special tax, by way of accounting for police taxes collected by it, would be as the representative of third persons with whom the board, exercising the power then vested in it, may have made contracts which depend upon such collected taxes for their fulfillment.—Supreme Court of Louisiana.

DEFECTIVE STREET—DAMAGES FOR INJURY

Stidham vs. Mayor, etc., of Delaware City.—It is the duty of those having control of the streets of a city to exercise due care to keep them in a reasonably safe condition, free from holes, pits, excavations, or obstructions, so that they may be safe for the traveler, on foot or otherwise, who may use them in a lawful manner. While a city is not an insurer against all injuries resulting from holes or obstructions in streets, it is liable for such injuries as result from its negligence or default, or that of its authorized agents, in the performance of a duty imposed on it by law. A traveler on the streets of a city may assume that they are in a reasonably safe condition, and is not bound to look for holes or obstructions. If a traveler on a city street, immediately before an accident caused by an alleged defect in a street, had timely warning of the danger and disregarded it, the city was not responsible. In an action against a city for injury to plaintiff's horse by an alleged defect in a street, negligence of the city is not presumed; but plaintiff is bound to prove, not only that the city was negligent, but that he himself was free from negligence. In an action for injuries to plaintiff's horse by an alleged defect in a street of defendant city, plaintiff's measure of damages was such sum as would reasonably compensate him for actual injuries to the horse, including loss of use and expenses incurred in attempting to cure him.—Superior Court of Delaware.

PRIORITY OF TAX LIENS

Haspel vs. O'Brien.—Though the Act of February 3, 1824, is repealed in terms by the Act of June 4, 1901, yet, as such latter act re-enacts the provisions of the act of 1824, giving priority to municipal liens in identical terms, the law is not changed by the act of June 4, 1901. Municipal claims for taxes, water rents, and paving, filed as liens of record after passage of Act June 4, 1901, on the distribution of proceeds of mortgage sales, insufficient to pay both liens and mortgages, have priority over mortgages made before that act.—Supreme Court of Pennsylvania.

IRRIGATING DITCH IN PUBLIC STREET

Kern Island Irrigating Co. vs. Bakersfield.—The owners of a tract of land verbally agreed to give a right of way to the plaintiff to run an irrigating trench along a portion of the tract which subsequently became a highway. The highway was subject to the right of way of the plaintiff to maintain this ditch as a conduit for water. Later the plaintiff enlarged the ditch so as to increase its capacity five or six times. The ditch was also placed in a new location. No consent was ever given by the Board of Supervisors to the construction of this new ditch, nor by the city of Bakersfield, of which the tract had become a part. The court held that a verbal agreement of the property owners was not binding on the public authorities. The agreement was not executed until after the avenue became a public highway. Therefore the right of way of the new ditch upon a different line from the old one was not paramount to the right of the public to use the highway.—Supreme Court of California.

CHANGE OF GRADE

Wheat vs. Vantine, et al.—Where plaintiff authorized and assented to the removal of dirt from the street in front of his land, he is estopped to complain of the removal to the extent he authorized and assented to it. Where no grade of the street in front of plaintiff's premises had been established, he cannot recover damages from the municipality for lowering the street. Where the Common Council authorized the excavation of a street, the failure of the Clerk to properly enter this upon the record of the Council's proceedings cannot affect the rights of those who, acting upon the faith of the authorization, excavated the street. Parol evidence is admissible to show proceedings taken by a Common Council, but not properly entered upon the record. The allowance by the Common Council of bills for the excavation of a street was a ratification of the act of excavation. Where bills allowed by a Common Council did not specifically state where the work was done for which they were rendered, parol evidence was admissible to show that they included the work of excavation in a certain street, and that they were approved by the Council with knowledge of that fact, in order to show ratification of the act of excavation by the Council.—Supreme Court of Michigan.

HOME RULE CHARTER

Turner vs. Snyder, et al.—Unless otherwise expressly provided, the provisions of a "home rule charter," if subject to municipal regulation, supersede the general laws with reference to the same subject matter. The new charter of respondent city, adopted July 31, 1906, superseded the General Laws, p. 130, c. 12, upon the subject of local assessments for street improvements.—Supreme Court of Minnesota.

CARE OF STREETS

City of Dayton vs. Glaser.—A municipal corporation is charged with the duty of keeping its streets free from nuisance and in a reasonably safe condition for travel in the usual modes, but it is not an insurer of the safety of persons using them, and when they are in that condition it is not chargeable with negligence, although an accident happens in the use of the streets.—Supreme Court of Ohio.

NATURE OF RIGHT TO OFFICE

Malone vs. Williams.—The act of March 27, 1907, entitled "An act to modify and change in certain respects the form of government of the city of Memphis and to amend its existing charter or charters so as to continue its existence with a more efficient form of government" declares that all offices existing under the charter of the city of Memphis and acts in amendment thereof are thereby vacated and abolished. Under the charter there was a city tax assessor, city attorney, and assistant attorney, judge and clerk of the city court, mayor, and vice-mayor; and Act March 27, 1907, provides for a city assessor, city counselor and assistant, judge and clerk of the corporation court, president, and vice-president, whose duties are respectively substantially the same as those of the corresponding officers under the city charter. Held, that the act could not have the effect to remove the officers holding under the city charter and create a vacancy to be filled by appointment, since though purporting to abolish the offices, it restored them under other names, and the rule being that, while an office may be abolished, yet the officer cannot be legislated out of office without an abolishment thereof.—Supreme Court of Tennessee.

TELEPHONE LINES—TREES

Cartwright vs. Liberty Telephone Company.—A telephone company not shown to have been granted a franchise to conduct a telephone business in a city, or authorized to use the city streets, cannot defend an action, for mutilating trees growing in a city street on the ground that the erection and maintenance of telephone lines is a proper use of a street, and that trees interfering with that use may be rightfully cut. A lot owner may plant shade and ornamental trees in a city street subject to the right of the city alone, or such as it may authorize to remove or trim the same where they interfere with a proper use of the street.—Supreme Court of Missouri.

INVALID ELECTION

Dobbs vs. Mayor, etc., of Buford.—The effect, where a person who is ineligible to hold the office receives a majority of the votes cast in an election, is not to give the office to the qualified person having the next highest number of votes, but to invalidate the election; and in such a case a new election must be held.—Supreme Court of Georgia.

THE WEEK'S CONTRACT NEWS

Relating to Municipal and Public Work—Street Improvements—Paving, Road Making, Cleaning and Sprinkling—Sewerage, Water Supply and Public Lighting—Fire Equipment and Supplies—Buildings, Bridges and Street Railways—Sanitation, Garbage and Waste Disposal—Police, Parks and Miscellaneous—Proposals and Awards

To be of value this matter must be printed in the number immediately following its receipt, which makes it impossible for us to verify it all. Our sources of information are believed to be reliable, but we can not guarantee the correctness of all items. Parties in charge of proposed work are requested to send us information concerning it as early as possible; also corrections of any errors discovered.

BIDS ASKED FOR

STATE	CITY	RECEIVED UNTIL	NATURE OF WORK	ADDRESS INQUIRIES TO
Street Improvements				
Tennessee.....	Johnson City...	September 5, noon...	Paving 4,800 sq. yds. 7 s.s. good material, 22,000 sq. ft. concrete sidewalk, 4,600 lin. ft. concrete curb, 4,200 ft. 8-inch vit. sewer, etc.	E. Ellsworth, Recorder.
New York.....	Monroe.....	September 5, 2 P.M.	Constructing 11,000 sq. ft. cement walk 1,400 ft. curb.	Fred J. Knight, Engineer.
Ohio.....	Carrollton.....	September 5, 3 P.M.	Grading and macadamizing 5 miles road, Springfield township.	R. H. Lee, Engineer.
New York.....	New York.....	September 5, 3 P.M.	Repairing asphalt roadways, paving curb, etc., parks.	Moses Herrman, Park Board.
Oklahoma.....	El Reno.....	September 5, 8 P.M.	Brick paving, 38,013 yds. on 5-in. concrete asphalt filler; also 4,922 ft. stone curb.	L. G. Adams, City Clerk.
Indiana.....	Mt. Vernon.....	September 5.....	Constructing a road 2 miles long.	Silas G. Howard, County Auditor.
Indiana.....	Rockville.....	September 5.....	Constructing gravel roads in Racoon, Union and Washington townships.	H. A. Henderson, County Auditor.
Illinois.....	Freeport.....	September 5.....	Macadam, 3 sts., sandstone curb, brick gutters; cost, \$75,000.	G. W. Graham, City Engineer.
Missouri.....	Kansas City.....	September 5.....	Laying asphalt, asphalt oil macadam, vit. brick, each one street.	E. A. Harper, City Engineer.
Kansas.....	Neodesha.....	September 5.....	Furn. and constructing brick paving and concrete curb for city.	Burns & McDonnell, Kansas City Mo., Engineers.
Ohio.....	Wilmington.....	September 5.....	Constructing Road No. 110, Union township.	J. A. Brown, Engineer.
Indiana.....	Evansville.....	September 5.....	Large amount of paving in County.	Vanderburg County Comrs
Ohio.....	Newark.....	September 5.....	Laying brick and curb, 2 sts.; sidewalk, 4 sts.	Board of Public Service.
Minnesota.....	St. Paul.....	September 5, 10 A.M.	Improving Larpeur Ave. from Lexington to Quincy Avenues.	Edw. G. Krahmer, Co. Auditor.
Wisconsin.....	Janesville.....	September 6, 2 P.M.	41,825 yds. brick paving, etc., E. Milwaukee St., 2 alleys.	C. V. Kerch, City Engineer.
Illinois.....	Champaign.....	September 6, 2 P.M.	Grading, 8,320 sq. yds. asphalt paving on concrete; 5,700 ft. curb, 1,820 ft. vit. pipe, etc., Daniel St.	Geo. C. Fairclo, City Engineer.
Maryland.....	Lonaconing.....	September 6.....	Grading and macadamizing 1 mile of Midland Road.	Co. Road Directors, Cumberland.
Indiana.....	Decatur.....	September 6.....	Constructing macadam road, Monroe; gravel rd., Preble twp.	C. D. Lawton, County Auditor.
Indiana.....	Bluffton.....	September 6.....	Constructing 23 gravel roads.	County Commissioners.
Ohio.....	Westerville.....	September 6.....	Constructing sidewalks in village.	R. H. Wagoner, Village Clerk.
Indiana.....	Indianapolis.....	September 6.....	Grading, paving, etc., 2 streets and one alley.	Blaine H. Miller, City Engineer.
Ohio.....	Upper Sandusky.....	September 6.....	Grading and stoning Eden and Antrim roads.	Wyandot County Commissioners.
Wisconsin.....	West Allis.....	September 6.....	Macadam sidewalks, curb on National Avenue.	F. Phillips, Jr., Clerk of Board.
Ohio.....	Washington, C. H.....	September 6.....	Purchase of 10-ton steam roller.	Board of Public Service.
Indiana.....	Terre Haute.....	September 7, 11 A.M.	Grading and paving with cinders, 2 1/2 miles of Road No. 5, Nevins township.	J. W. Denahie, County Auditor.
Indiana.....	Washington.....	September 7, 2 P.M.	Constructing Barber and Walker roads of gravel.	Thomas Nugent, County Auditor.
Ohio.....	Kent.....	September 7.....	Paving Franklin Ave., 9,247 sq. yds. block, 4,248 ft. curb, etc.	T. A. McMahon, Clk. Bd. Pub. Serv.
Ohio.....	Tontogany.....	September 7.....	Paving Main Street.	Village Clerk.
Texas.....	El Paso.....	September 9, 10 A.M.	Constructing macadam on County Road.	A. S. Bylar, County Judge.
Minnesota.....	St. Paul.....	September 9, 2 P.M.	Paving alley, Block 10, brick, asphalt, granite or wood block, etc.	R. L. Gorman, Clk. Bd. Pub. Wks.
Indiana.....	La Porte.....	September 9.....	Paving Harrison Ave. with asphalt.	Jacob Ackerman, City Engineer.
New Jersey.....	Orange.....	September 9.....	Macadamizing, curbing and flagging portion Tremont Ave.	Edw. Cheetham, Chm. Com. on Sts.
Florida.....	De Land.....	September 9.....	Constructing 5,000 lin. ft. 5-ft. sidewalks.	E. D. McLeod, City Clerk.
Ohio.....	Akron.....	September 9.....	Grading, paving and curbing Sherman St.	Board of Public Service.
Indiana.....	Valparaiso.....	September 10.....	Constructing stone road in Westchester and Liberty twps.	Porter County Commissioners.
Ohio.....	Cleveland Hts.....	September 10.....	Grading, draining and macadamizing.	Wm. G. Phare, Village Clerk.
Ohio.....	Cincinnati.....	September 11, noon.	Grading, paving, etc., 5 sts.; cost, \$121,815.	C. N. Dannenhower, City Eng'r.
New Jersey.....	Bridgeton.....	September 11, noon.	Improving 5.75 miles Malaga road, inc. 16,420 yds. earth exc. 9,232 yds. compact gravel, arch bridge, addition to bridge, culvert, 2 1/2 x 30 feet.	George Reeves, Freeholders.
Ohio.....	Cleveland.....	September 11.....	Constructing pavement on Berea road.	Julius C. Dorn, County Clerk.
Ohio.....	Chagrin Falls.....	September 11.....	Repairing pavement of Bentleyville road.	A. B. Lea, Cleveland Co. Engr.
New York.....	Brooklyn.....	September 11.....	Constructing sidewalks on six or more streets.	Bird S. Coler, Boro. President.
Ohio.....	Marietta.....	September 12, noon.	Grading, etc., portion of Marietta-Barlow Road.	J. M. Williams, County Auditor.
Ohio.....	Cincinnati.....	September 12, noon.	Grading, paving, etc., portions of Palm ave.; cost, \$6,316.	C. N. Dannenhower, City Engineer.
Iowa.....	Des Moines.....	September 13, 11 A.M.	Laying 12-in. asphalt on 6-in. concrete and one-in. binder course, 1,084 sq. yds., 562.5 ft. cement curb, Library Ave.; also 1,360 ft. curb E. 2d St. and 2,311 yds. vit. brick on concrete, 2 alleys	W. W. Wise, Bd. Pub. Works.
Ohio.....	Cincinnati.....	September 13, noon.	Grading, asphalt paving, etc., portions of five streets.	C. N. Dannenhower, City Engineer.
Wisconsin.....	Madison.....	September 13, 2 P.M.	Grading and constructing limestone macadam pavement, etc.	O. S. Norsman, City Clerk.
Ohio.....	Wauseon.....	September 13.....	Constructing grade on County line, German township.	J. E. Merrill, County Auditor.
South Carolina.....	Ft. Moultrie.....	September 14, 11 A.M.	Constructing 2 roads and walk s.	J. M. Fulton, Q. M., U. S. A.
Indiana.....	Peru.....	September 14.....	Grade, drain, pave, 2 1/2 miles gravel rd., Richland twp.; cost, \$40,000.	Chas. Griswold, County Auditor.
Ohio.....	Cleveland.....	September 14.....	Improving portions of Euclid road, Euclid township.	Julius C. Dorn, County Clerk.
Iowa.....	Des Moines.....	September 16.....	Laying vit. blocks on 6-in. concrete foundation.	W. W. Wise, Bd. Pub. Works.
Ohio.....	Fostoria.....	September 16.....	Paving and curbing six streets.	Board of Public Service.
Minnesota.....	St. Paul.....	September 16.....	Improving portion of Larpeur Avenue.	Edward G. Krahmer, Co. Auditor.
Ohio.....	Euclid.....	September 16.....	Furnishing and laying macadam, etc., Euclid road.	H. S. Dunlop, Village Clerk.
Minnesota.....	Eveleth.....	September 17.....	Laying 20,000 ft. artificial stone and cement sidewalks.	J. E. Carroll, Consulting Engineer.
Missouri.....	St. Joseph.....	September 18.....	Paving sts. with brick on sand and concrete curb.	Harry L. Murphy, City Clerk.
Indiana.....	Rockville.....	September 20, noon.	Constructing stone pike, 1 1/2 miles long.	W. B. La Bow, Veedersburg, Surv.
Ohio.....	Cincinnati.....	September 20.....	Improving Montgomery Pike.	Stanley Struble, County Clerk.
Texas.....	Dallas.....	September 20.....	Paving, curb, gutter, Ross Ave., Main St., any material; cost, \$100,000 to \$150,000.	E. L. Dalton, City Engineer.
Ohio.....	Cleveland.....	September 21.....	Repairing Wooster pike, inc., 750 cu. yds. bank sand, 150,000 second-quality brick, 800 cu. yds. crushed stone or slag, 325 bbls. Portland cement.	Julius C. Dorn, County Clerk.
Ohio.....	Hamilton.....	September 21.....	Paving and sanitary sewers, South D St.	Board of Public Service.
Ohio.....	Ottawa.....	September 21.....	Constructing 7 stone roads, Palmer, Monroe and Van Buren tps.	County Commissioners.
Indiana.....	Lebanon.....	September 24.....	Constructing Ezra Good Gravel Road.	B. F. Simmons, County Auditor.
Water Supply				
New York.....	Cazenovia.....	September 4.....	Supplying 5,400 ft. 4-in. c. i. pipe, 10 hydrants, 400 valves, etc.	Geo. W. Salisbury, Water Com'r.
Ohio.....	Bellevue.....	September 5, noon.	Bldg. rein. concrete walls around reservoir, 5,000 ft. long.	J. G. Overmyer, Fremont, Engineer.
Ohio.....	Leesburg.....	September 5, noon.	Constructing portion of waterworks system.	W. H. Mason, Clk. Bd. Pub. Affairs.
Ohio.....	Cleveland.....	September 6, noon.	Furnishing 400 one-in., 50 two-in. water meters.	A. R. Callow, Sec'y Bd. Pub. Serv.

Water Supply—Continued.

Quebec.....	Montreal.....	September 6, noon...	9-ft. concrete conduit, 27,300 feet.....	Geo. Janin, Supt. Water Works.
Kentucky.....	Louisville.....	September 6.....	Furnishing 20 fire hydrants.....	Clerk Bd. Pub. Works.
Florida.....	Pensacola.....	September 7, 11 A.M.	Constructing waterworks, inc. 100,000-gal. steel tank and tower.	Bureau Yards and Docks, Navy Dept., Washington, D. C.
Kentucky.....	Louisville.....	September 8, noon...	Pumping engines, 16, 20, and 30 million gallons respectively, and four boilers.....	B. Zorn, Pres. of Water Works
Illinois.....	Chicago.....	Sept'ber 9, 10:15 A.M.	Water service pipes in Wood St. from W. 90th St. to W. 107th St.	H. S. Dietrich, Pres. Bd. Local Imp.
Michigan.....	Stambaugh.....	September 9, 8 P.M.	Improving the water works.....	Edmund T. Sykes, Minpl's. Minn.En.
New Jersey.....	Orange.....	September 9, 8 P.M.	Constructing reservoir on old Friedman Farm; also 12, 20, and 24-in. water pipe and castings for pipe line.....	Fred. T. Crane, City Engineer.
New York.....	New York.....	September 9.....	Furn. pipe, fittings, stop cocks, lumber, timber and plumbers' and steamfitters' supplies for all hospitals in 1907.....	Thos. Darling, M. D. Bd. Health.
New York.....	Buffalo.....	September 10, 11 A.M.	Installing a vert. triplex boiler-feed pumps and heater.....	F. G. Ward, Com'r Pub. Works.
Ohio.....	Bryan.....	September 10.....	Constructing 6,600 ft. 4-in. c. i. pipe, to operate under 150-lbs. pressure; also 7 hydrants and connections.....	R. L. Starr, Pres. Bd. Pub. Affairs.
Iowa.....	Decorah.....	September 10.....	Bldg. automatic air-pressure steel tank or 500-bbl. overhead tank system, 60 ft. high at Poor Farm, Freeport.....	I. Linnevoold, County Auditor.
Ohio.....	Sibley.....	September 10.....	Open ditch, 10,300 cub. yds. excavation.....	V. A. Burley, Co. Auditor.
Georgia.....	Millen.....	September 12.....	Constructing \$30,000 electric light and water plant.....	H. Q. Bell, Mayor.
Tennessee.....	Lawrenceburg.....	September 13.....	Hydro-electric water works and lighting plant, inc. pump; steel tower and c. i. pipe hydrants and valves, pipe laying, etc.....	W. G. Kirkpatrick, Jackson, Miss. Eng. Commanding Officer.
Virginia.....	Norfolk.....	September 14, 11 A.M.	Constructing steel tank and tower at Navy Yard.....	J. F. Case, Chief Engineer.
Philippine Is'ds.	Manila.....	September 14, noon...	Valves and sluice gates for use in gravity water supply.....	Wm. E. Horton, Constr. Q. M. U. S. A. Army.
New York.....	Ft. H. G. Wright.	September 16.....	Furn. and installing 1,550 ft. 4-in. extension to water system...	Geo. R. Stearns, Dir. Dept. Pub. Wks.
Pennsylvania.....	Philadelphia.....	September 17.....	Third street pipe extension, as per Contract No. 131.....	C. L. Mitton, City Engineer.
Colorado.....	Canon City.....	September 20.....	Bldg. reservoir at Cottonwood Creek and pipe line to city mains.	
California.....	Los Angeles.....	Sept'ber 30, 3:30 P.M.	Furnishing f.o.b. cars Los Angeles, about 6,000 tons standard hub and spigot cast-iron water pipe; also 2 water tube 300-h.p. boilers and 7,000,000-gal. cross-compound engine.....	Wm. Mulholland, Supt. Water Bd.

Sewerage

Tennessee.....	Johnson City.....	September 5, noon...	Laying 4,200 ft. 8-inch vit. sewer, paving, curb, etc.....	L. N. Wilson, City Engineer.
New York.....	New York.....	September 5, 3 P.M.	Constructing brick sewer in Van Cortlandt Park.....	Moses Herman, Park Board.
Pennsylvania.....	Monessen.....	September 5, 4 P.M.	Constructing 700 ft. 4 ft. 6 in. x 6 ft. 9 in. 3-rung brick sewer, etc.	J. F. Irwin, Boro. Engineer.
Illinois.....	Bloomington.....	September 5.....	Constructing 1,990 ft. 15 and 18-in. pipe sewers.....	Chas. F. Fauntz, City Engineer.
Missouri.....	Kansas City.....	September 5.....	Constructing sewers in Dist. Nos. 299, 212, and 264 Div. 2, 3 & 4	E. A. Harper, City Engineer.
Iowa.....	Dubuque.....	September 5.....	Constructing 8-in. tile pipe sanitary sewer, 100-ft. long.....	Paul Hq, City Engineer.
Montana.....	Bozeman.....	September 5.....	Constructing pipe sewers, to cost \$36,000.....	C. M. Thorpe, City Engineer.
South Carolina.....	Sumter.....	September 5.....	Constructing sanitary sewer system; 14 miles, 18 to 22-in. pipe, etc.....	Wm. H. Lyon, Consulting Engineer.
New York.....	Olean.....	Sept'ber 6, 7:30 P.M.	Laying 10-in. vit. pipe sewer in portion N. Eleventh St.	E. E. Allen, Supt. Streets.
Ohio.....	Warren.....	September 6.....	Constructing lateral sewers on Woodland avenue.....	E. M. Milligan, City Eng.
Iowa.....	Iowa City.....	September 6.....	Construction of sewer in Bowery St.....	J. O. Schultz, City Engineer.
Washington.....	Seattle.....	September 7, 10 A.M.	Constructing Green Lake Dist. of North trunk sewer.....	C. B. Bagley, Sec'y Bd. Pub. Works.
Illinois.....	Chicago.....	Sept'ber 9, 10:15 A.M.	Adjusting sewers, catch basins, paving, etc., 3 sts.....	H. S. Dietrich, Pres. Bd. Local Imp.
Minnesota.....	St. Paul.....	September 9, 2 P.M.	Constructing sewer in Franklin St., Eustis St. to Raymond Ave.	R. L. Gorman, Clk. Bd. Pub. Works.
New Jersey.....	Camden.....	September 9.....	Constructing stone and brick culvert, Delaware township.....	Geo. W. Whyte, Chm. Freeholders.
Ohio.....	Zanesville.....	September 9.....	Constructing storm water sewer S. W. Dist. No. 5.....	Board of Public Service.
South Dakota.....	Bryant.....	September 9.....	Constructing drainage and sewerage system.....	F. R. Shepherd, City Auditor.
Tennessee.....	Chattanooga.....	September 10.....	Constructing Chestnut St. sewer from Ninth St. to river.....	Robert Hooke, City Engineer.
Illinois.....	Chicago.....	September 11, 11 A.M.	Constructing 64 ft. sewer in 35th St., extended.....	John J. Hanberg, Com'r Pub. Works.
New York.....	Brooklyn.....	September 11, 11 A.M.	Constructing sewers and basins in various streets.....	Bird S. Coler, Borough President.
Pennsylvania.....	Philadelphia.....	September 11, noon...	Constructing 11,330 ft. 33 to 7 ft. brick sewers; 8 contracts; cost, \$188,500; 32 contracts; branch sewers of brick under 3 1/2 ft. diam., cost, \$100,000; inlets, laterals, etc., cost, \$5,000; reconstructing Pine St. sewer, 300 ft., 8 ft. brick and concrete; cost, \$25,000.....	Geo. S. Webster, Ch., Eng'r D. P. W.
Louisiana.....	New Orleans.....	September 11, 3 P.M.	Constructing 110 miles 8 to 27-in. sewer, depth 5 to 17 ft., including 1,230 manholes and 443 flush tanks; 4 contracts.....	F. S. Shields, Sec'y S. & W. Board.
New Jersey.....	Hoboken.....	September 11, 8 P.M.	Cleaning and repairing sewer in Jackson St., bet. 4th and 5th.....	J. H. Londrigan, City Clerk.
Ohio.....	Sandusky.....	September 11.....	Constructing sewer in Warren and Finch Streets.....	Board of Public Service.
Ohio.....	Cleveland.....	September 11.....	Constructing four sewers and culverts.....	A. R. Callow, Sec'y Bd. Pub. Serv.
Iowa.....	Des Moines.....	September 13, 11 A.M.	Constructing 652 ft. 12-in. vit. pipe sewer, Capitol Ave.....	W. W. Wise, Board Pub. Works.
Wisconsin.....	Lakemills.....	September 13, 7:30 P.M.	Constructing 1,887 ft. 6-in.; 1,887 ft. 8-in.; 1,225 ft. 10-in.; 823 ft. 12-in.; 1,513 ft. 15-in.; 75-ft. 18-in.; 2,367 ft. 24-in. vit. pipe sewer, etc.....	W. G. Kirchoffer, Madison, Eng'r.
Indiana.....	Linton.....	September 16, 4 P.M.	Constructing sanitary sewer system, inc. 13 miles of sewer with disposal plant; cost, \$64,000.....	Frank Spilling, City Clerk.
Ohio.....	Postoria.....	September 16.....	Constructing sewers in Columbus Ave. and Town St.....	Board of Public Service.
Ohio.....	Barberton.....	September 16.....	Improving main and local storm sewers, Dist. No. 1.....	George Davis, City Clerk.
Ohio.....	Canton.....	September 16.....	Constructing sanitary sewer, N. Cleveland Ave., inc. 2,500 ft. 5-in., 385 ft. 6-in. vit. pipe; 1,600 ft. house con. 11 manholes, etc.....	B. F. Faust, Clk. Bd. Pub. Serv.
New Jersey.....	South Orange.....	September 17, 8 P.M.	Bldg. 2 sections sanitary sewers; 3,460 ft. 10-in., 15,080 ft. 8-in. vit. pipe, 63 manholes, 12 flush tanks. Maplewood Dist.; 250 ft. 10-in., 16,648 ft. 8-in. vit. pipe, 47 manholes, 13 flush tanks S. O. Heights Dist.....	Alex. Potter, N. Y. City, Cons. Eng.
Pennsylvania.....	Philadelphia.....	September 17.....	Bldg. sewer connecting Upper Roxborough, Cont. No. 132.....	Geo. R. Stearns, Dir. Pub. Works.
Maine.....	Togus.....	September 19, noon...	Improving sewer and drainage system, Soldiers' Home.....	Geo. W. Fuller, N. Y. City, Eng'r.
Mississippi.....	Canton.....	September 19.....	Material and labor for system of house sewers, complete, inc. 7 miles, 18 to 8-in. pipe.....	W. G. Kirkpatrick, Jackson, Eng'r.
Ohio.....	Hamilton.....	September 21.....	Constructing sanitary sewers, etc., South D St.....	Board of Public Service.
Ohio.....	Delaware.....	September 27, 6 P.M.	Constructing sewage disposal plant, Girls' Industrial School.....	T. F. Dye, Sec'y Bd. Trus.
California.....	Fairfield.....	September 30.....	Constructing sewerage system to cost \$25,000.....	Town Clerk.

Public Buildings

New York.....	Willard.....	September 4.....	Erecting, heating, etc., tuberculosis pav., Willard State Hosp.....	T. E. McGarr, Capitol, Albany.
Indiana.....	Evansville.....	September 5, 10 A.M.	Erection of stable and wash-house for County Orphan Asylum.....	Commissioners of Vanderburg Co.
South Carolina.....	Columbia.....	September 5.....	Additions, alterations and roofing the Court House.....	Strand & La Faye, Architects.
Indiana.....	Newcastle.....	September 5.....	Erecting two cottages, Ind. Village for Epileptics.....	W. S. Kantman & Sons, Richmond, Architects.
New Jersey.....	Trenton.....	September 5.....	Bldg. additions 2 schools; alterations, etc., 18 buildings.....	Wm. B. Thines, Architect.
Kansas.....	Liberal.....	September 6.....	Erecting 2-story 64x64 brick Court House; cost, \$13,000.....	J. M. Smith, Hutchinson, Arch.
North Dakota.....	Hillsboro.....	September 7.....	Erecting an armory.....	Haxby & Gillespie, Fargo, Arch.
Ohio.....	Cleveland.....	September 9, noon...	Completing annex to Harvard School.....	Charles Orr, Director of Schools.
North Dakota.....	Roulette.....	September 9.....	Erecting brick school, Leonard School Dist. No. 9.....	Theo. A. Thorsen, Clk. School Bd.
Connecticut.....	N. Grosvenor Dale	September 9.....	Erecting Tourtelotte Memorial high school.....	McLean & Wright, Boston, Mass. Architects.
South Dakota.....	Ioswich.....	September 9.....	Erecting brick addition to school.....	S. H. Rossiter, Clk. School Board.
Iowa.....	Nicholas.....	September 9.....	Erecting a Town Hall.....	H. W. Zeidler, Muscatine, Architect.
Pennsylvania.....	Midland.....	September 9.....	Erecting 2-story school.....	Independent School Board.
Wisconsin.....	Milwaukee.....	Sept'ber 9, 10:30 A.M.	Erecting hospital bldg. for Fire Dept. horses, separate bids.....	C. J. Poetsch, City Engineer.
Missouri.....	Kansas City.....	September 10.....	Erecting three Fire Department Stations.....	Everett Elliott, Sec'y Bd. Pub. Wks.
New York.....	Whitesboro.....	September 10.....	Erecting, complete, Fire Department building.....	W. G. Fraak, Utica, Arch.
Indiana.....	Syracuse.....	September 10.....	Erecting a school building.....	Griffith & Fair, Ft. Wayne, Archts.
Georgia.....	Forsyth.....	September 10.....	Heating the County Court House.....	J. S. Jossey, Chm. Bd. Commissioners.
North Dakota.....	Kenmore.....	September 10.....	Heating and plumbing for new high school.....	Frost & Hosmer, Minot, Architects.
California.....	Eureka.....	September 11, 10 A.M.	Erecting County Jail with either brick walls and wood floors or concrete throughout; also cell and grating work.....	Geo. Cussins, Clk. Co. Supervisors.
New York.....	Buffalo.....	September 11.....	Erecting 20-room brick school; separate bids on work, etc.....	F. G. Ward, Com'r Pub. Works.
Pennsylvania.....	North Braddock.....	September 11.....	Erecting high school at Bell Ave. and Verona St.....	U. J. L. Peoples, Pittsburgh, Arch.
Iowa.....	Des Moines.....	September 12, 11 A.M.	Erecting 2-story brick fire station; also plumbing and heating.....	W. W. Wise, Bd. Pub. Wks.
Florida.....	Marianna.....	September 12, noon...	Erecting \$20,000 high school building.....	J. C. Folsom, Bldg. Com'r.
New York.....	Rome.....	September 12, 3 P.M.	Constructing approaches at U. S. Post Office.....	James Knox Taylor, Wash., D. C.
Indiana.....	Crown Point.....	September 14, noon...	Erecting addition to County Court House.....	Charles A. Johnson, Co. Auditor.
New York.....	Hudson.....	September 14, 1 P.M.	Erecting complete, 3 cottages, etc., to Industrial Building.....	G. L. Heins, Albany State Arch.

Public Buildings—Continued.

Kansas.....	Chapman.....	September 15.....	Erecting stone addition to County High School.....	L. M. Wood, Topeka, Architect.
Dist. of Col'bia.....	Washington.....	September 16, noon.....	Erecting machine shop at Washington hall filtration plant.....	Spencer Cosby, Maj. Eng'rs, U. S. A.
New York.....	Buffalo.....	September 16, 3 P.M.....	Constructing (except elevators) U. S. Marine Hospital.....	James Knox Taylor, Superv. Arch. Washington, D. C.
Washington.....	Pullman.....	September 16.....	Constructing library and assembly hall bldg. and heating for same for State College.....	John K. Dow, Spokane, Architect.
Pennsylvania.....	Pittsburg.....	September 16.....	Constructing (except elevators) U. S. Marine Hospital.....	James Knox Taylor, Wash., D. C.
Ohio.....	Youngstown.....	September 16.....	Erecting addition to Children's Home.....	W. B. Jones, County Auditor.
New York.....	New York.....	September 17, 2 P.M.....	Erecting 2-s'ry and attic bldg. near High Falls, Marbltown twp.	Board of Water Supply.
California.....	San Francisco.....	September 17, 3 P.M.....	Repairs, alterations, etc., U. S. Mint Building.....	James Knox Taylor, Wash., D. C.
Kansas.....	Lawrence.....	September 17.....	Erecting Eng. Bldg.; also furn., etc., Univ. Kansas.....	Regents, Univ. of Kansas.
North Dakota.....	Valley City.....	September 17.....	Superstructure of school; destroyed by fire; cost, \$25,000.....	Board of Education.
Michigan.....	Agricult'l College.....	September 18, noon.....	Constructing agricultural bldg., Mich. Agr. College.....	E. A. Bowd, Lansing, Mich., Arch.
Iowa.....	Muscatine.....	September 19, 3 P.M.....	Construction U. S. Post-office.....	James Knox Taylor, Superv. Arch.
Ohio.....	Hamilton.....	September 24, 3 P.M.....	Constructing, complete, U. S. Post Office Building.....	James Knox Taylor, Wash., D. C.
California.....	Riverside.....	September 26, 2 P.M.....	Erecting cottages, stable, mess hall, etc., all brick.....	Harvard Hall, Supt. Ind. School.
Iowa.....	Muscatine.....	September 26, 2 P.M.....	Furn. material and erecting, complete, fireproof Court House.....	Jos. E. Mills, Detroit, Mich., Arch.
South Dakota.....	Brookings.....	September 26.....	Erecting law building at Vermillion and ladies' dormitory at Brookings; each to cost \$40,000.....	Irwin D. Aldrich, Sioux Falls.
Alabama.....	Selma.....	September 30, 3 P.M.....	Erecting, complete, U. S. Post Office.....	James Knox Taylor, Wash., D. C.
Wisconsin.....	Eau Claire.....	October 1, 3 P.M.....	Erecting, complete, Federal Building.....	James Knox Taylor, Wash., D. C.
North Dakota.....	La Moure.....	October 3, 10 A.M.....	Plans and specifications for Court House, \$60,000 to \$100,000.....	E. W. Field, County Auditor.
Wisconsin.....	De Pere.....	October 5.....	Plans for 3-story and basement Court House and 2-story basement jail, fireproof, complete; cost, \$300,000.....	Special Bldg. Com. County Board,
Maryland.....	Baltimore.....	October 7, 3 P.M.....	Erecting and mechanical equipment, Federal Building.....	James Knox Taylor, Wash., D. C.

Bridges

New York.....	Elmira.....	September 4, 11 A.M.....	Erecting two bridges over Newtown Creek.....	S. A. Warner, City Clerk.
New Jersey.....	Rahway.....	September 4, 3 P.M.....	Erecting rein. concrete bridge 46 ft. wide, 60-ft. span over river.....	J. L. Bauer, Elizabeth, County Eng'r.
Ohio.....	Akron.....	September 5, 11 A.M.....	Raising abutments and repairing Old Mill bridge.....	Mark D. Buckman, County Auditor.
Ohio.....	Eaton.....	September 5, noon.....	Constructing superstructures of various bridges.....	Fred. C. Roberts, Engineer.
New York.....	New York.....	September 5.....	Bldg. steel and masonry approach, Blkwl's Island br., Boro Q'ns	J. W. Stevenson, Com'r Bridges.
Ontario.....	Ottawa.....	September 5.....	Bldg. superstructure and floor systems for 18 bridges.....	P. E. Ryan, Sec'y Trans. Ry. Com.
Ohio.....	Steubenville.....	September 6, noon.....	Constructing superstructure bridge No. 12, Salina township.....	J. M. Reynolds, County Auditor.
New Jersey.....	Laurel Springs.....	September 9, 11 A.M.....	Building iron truss bridge, 64 ft. long, over Laurel Lake.....	J. J. Albertson, County Engineer.
Kansas.....	Wichita.....	September 9, noon.....	Constructing rein. concrete bridge over river at Douglas Ave.....	George H. Bradford, Engineer.
Louisiana.....	Plaquemine.....	September 9, noon.....	Constructing approaches and steel drawbridge over Bayou Plaquemine.....	Jules A. Herbers, Clerk Police Jury.
California.....	Yosemite.....	September 10, noon.....	Erecting steel bridge over Merced River in Yosemite Valley.....	Maj. H. Benson, U. S. A., Act. Supt.
Pennsylvania.....	Philadelphia.....	September 11, noon.....	Erecting 4 bridges; 2 steel girder bridges, encased in concrete, 410 ft. long, 126 ft. wide, cost, \$85,000; and 136 ft. long, 56 ft. wide, cost, \$52,500; rein. concrete arch bridge, span 65 ft. width, 100 ft., cost \$45,000; concrete arch bridge, 3 spans, 80 ft. 2 in. each, width, 100 ft.; cost, \$100,000; over r'oads, etc.	Geo. R. Stearns, Dir. Pub. Works.
Nebraska.....	Dunbar.....	September 13, noon.....	Constructing 50-ft. steel bridge, 14-ft. roadway on 30-in. steel tubes, 222 ft. long, 12-ft. approaches, 7 miles from Dunbar.....	Chas. H. Busch, County Clerk.
Ohio.....	Lorain.....	September 13, 1 P.M.....	Erecting steel bridge, concrete floor; also stone abutments for two bridges.....	L. A. Fauver, County Surveyor.
Colorado.....	Leadville.....	September 13.....	Erecting an 80-ft. concrete bridge.....	G. Houston, Denver, Dep. St. Eng'rs.
Ohio.....	Cleveland.....	September 14, 11 A.M.....	Constructing concrete steel bridge in Strongsville twp.....	Julius C. Dorn, County Clerk.
California.....	Adin.....	September 16, 10 A.M.....	Constructing bridge over Ash Creek at Main Street.....	L. S. Smith, Clerk, Supervisors.
California.....	Madera.....	September 16, 10 A.M.....	Constructing bridge across Horace Gold Creek.....	County Supervisors.
Mississippi.....	Vicksburg.....	September 16.....	Erecting 2-rein. concrete bridges; 100 cu. yds. concrete each.....	H. J. Trowbridge, City Clerk.
Colorado.....	Greeley.....	September 20.....	Erecting reinforced concrete bridge, 135 ft. long.....	G. Houston, Denver, Dep. St. Eng'rs.
Ohio.....	Tiffin.....	September 20.....	Repairing Perry St. bridge, to cost \$7,500.....	County Commissioners.
Ohio.....	Newark.....	September 23.....	Erecting 105-ft. span riveted steel truss bridge.....	J. L. Gilpatrick, County Auditor.
Chile, So. A.....	Santiago.....	September 30.....	Erecting several bridges in Chile.....	Wessel, Duval & Co., N. Y. City.
Florida.....	Palatka.....	October 0.....	Erecting \$60,000 bridge over St. John's River.....	R. R. Price, County Engineer.
Manitoba.....	Dunrea.....	October 15, noon.....	Constructing steel bridge, two 100-ft. spans, on concrete and boulder masonry foundation over Souris River.....	J. H. Putnam, Mun. Riverside.
China.....	Canton.....	October 19.....	Constructing steel cantilever and girder bridge, 1,102 ft. long, in Front Reach, 740 ft. west of Dutch-folly Fort.....	Canton River Bridge Co., Ltd.

Lighting and Electricity

New York.....	Brooklyn.....	September 4.....	Furnishing 15-motor-generator sets, etc., navy yard; cost, \$72,000.....	Commanding Officer.
Ontario.....	Campbellford.....	September 5.....	Rock cutting, concrete work, turbine wheels, generators, etc., for 4,000 h.p. and 2 1/2 miles transmission line for power development.....	John S. Fielding, Toronto, Can., Engr.
New York.....	Buffalo.....	September 6.....	Furn. and installing electric light fixtures, etc., 74th Regt. Armory.....	H. D. Piest, Clerk, Bd. Superv.
New York.....	Ellis Island.....	September 7.....	Furn. and installing electric lighting, Contagious Hosp. Group.....	Robt. Watchorn, Com'r Immigration.
Brit. Columbia.....	Revelstoke.....	September 9, 6 P.M.....	Additional equipment and rearranging city hydro-electric plant, inc. 500 b. h. p. producer gas plant and gas engines, generators and exciters, transmission machinery, switch boards, etc.....	Cecil Goddard, Winnipeg, Ch. Eng'r.
New York.....	Brooklyn.....	September 9.....	Completing contract, electric equipment, School 109.....	C. B. J. Snyder, Supt. Sch. Bldgs.
Illinois.....	Chicago.....	September 10, 11 A.M.....	Furnishing 150 combination c. i. and steel electric light arc lamp posts; also 5,000 gas mantle burners and 450 doz. gas mantle frames.....	Wm. Carroll, City Engineer.
Ohio.....	Troy.....	September 10.....	Furn. and installing 300 k. w. alternating generator, etc.....	L. A. Ziegenfelder, Clk., Bd. Pub. Scr.
Georgia.....	Millen.....	September 12.....	Constructing \$30,000 electric light and water plant.....	J. B. McCrary & Co., Atlanta, Eng'rs.
Virginia.....	Port Myer.....	September 12.....	Furn. and installing acetylene fixtures, Isolation Hospital.....	Capt. B. B. Hyer, Q. M., U. S. A.
Tennessee.....	Lawrenceburg.....	September 13.....	Material and labor for three 30-in. turbines; dynamo induction motor and arc lights; centrifugal or triplex pump; steel tower and tank; c. i. pipe; hydrants and valves; cyclopean or rein. concrete pen stocks and power house; installing machinery electric light construction; pipe laying.....	W. G. Kirkpatrick, Jack, Miss. Eng.
New York.....	New York.....	September 14, 11 A.M.....	Motor generator sets and accessories for navy yard.....	Commanding Officer.
New York.....	Napanock.....	September 14, noon.....	Furn. and erecting all structural steel and iron work for power-house and stack and conduits Eastern N. Y. Reformatory.....	G. L. Heins, Albany, State Arch.
Ohio.....	Milton.....	September 16.....	Lighting village with 30 arcs, and few incandescent clusters, and franchise for commercial lighting.....	John Coate, Village Clerk.
Ohio.....	Columbus.....	September 17.....	Furnishing and installing, complete, at power house, Columbus State Hospital, engine, dynamo and switch board.....	Frank L. Packard, Architect.
New Hampshire.....	Portsmouth.....	September 21, 11 A.M.....	Erecting extension to power house at navy yard.....	Commanding officer.
New York.....	Rochester.....	September 20.....	Furn. and installing 150 h.p. 130-lb. pressure internal furnace boiler in Co. power house; also electric lighting plant in basement of Court House.....	G. L. Meade, Chm. Co. Com'rs.
New York.....	West Point.....	September 30.....	Furn. and installing combination gas and electric light fixtures, etc., old and new Cadet barracks.....	Maj. J. M. Carson, Q. M., U. S. A.
Manitoba.....	Winnipeg.....	October 1, noon.....	Constructing general works and supply of equipment for hydro-electric station at Point du Bois.....	Chairman Board of Control.
Florida.....	Jacksonville.....	October 4.....	Furnishing and setting up 1,500 k. w. steam turbo-generator, 50 k. w. motor driven exciter.....	R. N. Ellis, Supt. Light Plant.
India.....	Calcutta.....	December 31.....	Lighting town by electricity, gas, oil, or other method; now lighted by 9,300 gas lamps of 24 c.p. and 2,400 c.p. oil lamps.....	Municipal Council.

Miscellaneous

New York.....	Buffalo.....	September 5, 11 A.M.....	Pile pier on south line of Jersey Street.....	P. G. Warl, Com'r Pub. Wks.
Wisconsin.....	River Falls.....	September 5.....	Furn. 500 to 1,000 ft. 2 1/2-in. rubber-lined cotton fire hose.....	Allen P. Weld, City Clerk.
Ohio.....	Hamilton.....	September 6.....	Furn. 2,000 ft. double jacket cotton fire hose.....	Frank Connor, Clk., Bd. Pub. Safety.
Dist. of Col'bia.....	Washington.....	September 7, 11 A.M.....	Dredging 20,000 cu. yds. from channel at navy yard.....	R. C. Hollyday, Navy Dent.
Ohio.....	Cleveland.....	September 10.....	Extension of east and west breakwaters, Fairport Harbor.....	C. McD. Townsend, U. S. Engrs.
New Jersey.....	Hoboken.....	September 11, 8 P.M.....	Removal of ashes, garbage, rubbish, str. sweepings, etc., 1 year.....	James H. Lon'rian, City Clerk.
Ohio.....	Cincinnati.....	September 11.....	Building dyke and shore protection, Ohio River, nr. Grain Ch., Ill.	Col. W. T. Rossell, Eng'r Corps.
Indiana.....	Ft. Benj. Harrison.....	September 13, 10 A.M.....	Erecting a garbage crematory.....	Geo. H. Penrose, O. M., U. S. Army.
California.....	Stockton.....	September 16.....	Bldg. concrete bulkhead north side channel; cost, \$10,000.....	R. C. Tumulty, City Engineer.

STREET IMPROVEMENTS

Birmingham, Ala.—Council has passed ordinance for grading and macadamizing Eighth avenue, from Walker to Thirteenth street, pave gutters and curbing and sidewalks, at cost of \$13,000.—Walter Moore, Acting Mayor.

Los Angeles, Cal.—S. Stormer, W. Bowser and S. W. Pyle, the committee appointed to report upon expense of the proposed widening of Wilson avenue to 70 feet, estimate the cost of the work will be \$1,405; property owners will be entitled to \$8,715 damages, making a total of \$10,120.

Martinez, Cal.—The County Board has under consideration an issue of \$500,000 bonds for road purposes.

San Mateo, Cal.—The Board of Trustees has adopted plans for improving streets, at cost of \$30,000, including concrete curb and gutter, macadamizing roadway, etc., total 11,040 lineal feet, at \$2.75 per front foot.

Colorado Springs, Col.—Council has passed resolutions ordering sidewalks to be laid on various streets.

Fernandina, Fla.—Centre street will probably be paved with vitrified brick; estimated cost, \$32,000.—E. R. Conant, Engineer.

East St. Louis, Ill.—An ordinance has been passed requiring an expenditure of \$73,000; streets are to be paved with granite block.—Address City Clerk.

Indianapolis, Ind.—The Board of Public Works has adopted resolutions to lay creosoted wooden block pavement on Pennsylvania street and on Talbot avenue; and a brick roadway on Hoyt avenue.

Ardmore, I. T.—Bonds, \$20,000, will be issued for street improvements, bearing 5 per cent. interest, payable semi-annually, and to run for 20 years.

Leavenworth, Kan.—Orders have been passed authorizing an issue of \$20,238 street improvement bonds.—Address City Clerk.

Saginaw, Mich.—The Board of Public Works has recommended to Council that Water street be paved, between Thompson and Holden streets, with brick pavement.—Address City Clerk.

Eveleth, Minn.—Bids will be asked for laying 1,800 lineal feet of 12-foot cement sidewalks.—Edward Skeel, City Clerk; J. E. Carroll, Consulting Engineer, Crookston, Minn.

Minneapolis, Minn.—The Board of Aldermen has ordered \$25,000 to be expended in curb and gutter improvements.

East Orange, N. J.—City Council has passed an ordinance providing for an eight-foot sidewalk on Main street.

Jersey City, N. J.—The Street and Water Board have adopted specifications for asphalt paving Bowers street, and repaving Griffith street with Belgian blocks on a concrete base.

Nyack, N. Y.—The Board of Trustees has decided to sprinkle the streets with oil.

Utica, N. Y.—Council has ordered \$2,784.46 paying bonds, and \$2,500 for the repair fund.

Fargo, N. D.—Council has passed a number of resolutions providing for tile cement walks on a number of streets.

Winston-Salem, N. C.—The matter of issuing \$300,000 road improvement bonds is being considered by the Forsythe County Board.—Address County Auditor.

Akron, O.—Petitions have been presented to Council for paving Crosby avenue, from Beck to Portage avenue.

Collinwood, O.—Sealed bids will be received by Wm. G. Phare, Clerk of the village of Cleveland Heights, until September 10, for the purchase of \$20,466 Lee road improvement bonds No. 1 for \$466, payable October 1, 1908, and \$1,000 payable each year thereafter until all are paid. Sealed bids will be received same day, same place, for bonds in the aggregate sum of \$1,672. No. 1, for \$172, payable October 1, 1911; No. 2, for \$500, payable October 1, 1913, and \$500 every two years until paid. All of said bonds draw interest at the rate of 4½ per cent. per annum, payable semi-annually.

Columbus, O.—Sealed bids will be received by the Board of Commissioners of Franklin County until September 6, for the purchase of \$3,500 worth of 5 per cent. Demorest free turnpike road bonds; bonds are dated September 1, 1907, due September 1, 1908, and one each year for like amount until 1912, then \$400 until all are paid.

Lima, O.—Property owners along Central avenue have asked that the street be paved with paving brick.

Lisbon, O.—Bids will be received, September 10, for the purchase of \$7,300 5 per cent. street improvement bonds.—Lodge Riddle, Village Clerk.

New Philadelphia, O.—Front, High, Fair and Ray streets will have to be curbed between Broadway and Seventh streets, according to an ordinance passed by Council.

Toledo, O.—A committee of Hicks street residents has petitioned Council to have the pavement continued from its present terminus at Forest avenue three-fourths of a mile, to Clinton street.

Woodsfield, O.—Sealed bids will be received by Geo. P. Dorr, Clerk of the village, until September 16, for the purchase of \$5,041.34 worth of village street improvement bonds, dated August 15, 1907, payable on the first of March and September of each year, 1908, '09, '10, '11, '12, '13, '14, '15, '16 and '17, bearing interest at 5 per cent. per annum, payable semi-annually on March and September; certified check for 10 per cent. is required.

Altoona, Pa.—The Council Committee on Public Works has approved ordinances for paving a number of streets and inspection of curbs.

Harrisburg, Pa.—Arrangements are being made to pave several streets in the city.—M. E. Cowden, Engineer.

Philadelphia, Pa.—Mayor Reyburn will apportion \$300,000 of \$1,000,000 received from Drexel & Company, as part payment of the new loan, to street paving; Acting Chief Smith, of the Highway Bureau, will at once prepare proposals for the repaving of sections where the works is most badly needed, and as the money is now available the work of repaving will most likely be started by the latter part of the month; it is understood that the greatest amount of repaving will be done in the northeast wards.

Chattanooga, Tenn.—The Street and Sewer Committee has accepted specifications for improving streets in several districts by paving with brick on concrete foundation.—Address Clerk of the Board.

Dallas, Tex.—The city will soon advertise for bids and award contract for laying approximately 50,000 square yards of street paving.—William Doran, Commissioner of Streets and Public Property.

Palestine, Tex.—The citizens have voted \$50,000 bonds for street improvements.—Address City Clerk.

Salt Lake City, Utah.—It will cost \$65,660.22 to pave Third West street, from North Temple to Third South street, with asphaltum, according to the estimate made by L. C. Kelsey, City Engineer; the estimate provides for a 92-foot roadway; of the total cost the abutting property owners will have to pay \$60,720 and the city \$4,940.22. The burden will fall the heaviest on the Oregon Short Line Railroad, which will be asked to contribute about \$25,000; the paving is made necessary by the construction of the new Rio Grande and Oregon Short Line depots. It is not contemplated that the work can be done this year, but it will be advertised for early in the spring, so that bids may be received and the contract let in time for its completion during the early summer months.

Chehalis, Wash.—A resolution has passed Council for the pavement of two blocks of Chehalis avenue, a main business street; brick, hazzam or asphalt are to be used, but no particular kind of pavement was specified; the improvement is estimated at \$15,000; the blanket ordinance for the improvement of all the streets south of Park street, including the frontage of about 35 blocks, was introduced, the estimated cost being \$30,000. Contracts already let for street improvements here now aggregate \$70,000, and other work now before the Council will add another \$50,000 to the total.

Spokane, Wash.—H. L. Lillenthal, of this city, has been awarded contract to pave Short Court, in Manito Park, with the new oil process.

Green Bay, Wis.—Council has passed a resolution to construct sidewalks on South Jackson street.

Milwaukee, Wis.—Bids will be received by the Comstock-Haigh-Walker Company, for building cement sidewalks on Sixth street, between Burleigh street and Atkinson avenue; specifications and full particulars can be secured at the office of the Columbia Construction Company.

SEWERAGE

Montgomery, Ala.—Council has passed a number of sanitary ordinances, and appropriated nearly \$4,000 for the laying of sanitary sewers on a number of streets.

Berkeley, Cal.—The Board of Public Works is planning to establish a sewer system in Chautauk avenue.—Address City Clerk.

Oakland, Cal.—The Board of Public Works has adopted plans and specifications for an intercepting sewer in Wood street.

San Jose, Cal.—Plans for an oval intercepting sewer 2 feet wide, 3 feet high, for the First and Fourth Wards, have been prepared by City Engineer Pieper; cost, not to exceed \$40,000.

Albany, Ga.—An election will be held, September 23, to vote on the question of issuing \$75,000 bonds for sewerage and water works.—Address City Clerk.

Ardmore, I. T.—Bonds, \$25,000, will be issued for the construction of two septic tanks at the mouth of the sewer system.

Joliet, Ill.—Council has approved profiles, estimates and ordinances for sewer improvements on Collins street and Meeker avenue,

and the Seventh Ward system. The Meeker avenue work will cost \$7,726.71, and the Seventh Ward construction, \$15,312.70; the City Engineer will also prepare profiles for a 12-foot stone or concrete sidewalk on the east side of Chicago street, between Jackson and Columbia streets.

Kankakee, Ill.—A short storm sewer will be built on Union street, and the Kankakee and Seneca will provide a suitable outlet for it through their right of way.

Springfield, Ill.—The Street and Alley Committee has passed the ordinance providing for the proposed extensive sewerage system for the south ends of the Fourth, Fifth and Sixth wards.

Newark, N. J.—An ordinance has been passed to lay house or city connections to the public sewer.—M. R. Sherrard, City Engineer.

Bolivar, N. Y.—A special election will be held to vote on the question of issuing \$43,000 sewer bonds.—Address City Clerk.

Fulton, N. Y.—The city has decided to issue \$20,000 bonds for constructing sewer.—Address City Clerk.

Akron, O.—The city is arranging to construct sewers in the West Hill District.

Cincinnati, O.—Surveys are being made by the City Engineer and Sewer Engineer Layman for a comprehensive system of storm water sewers south of Liberty street.

Dayton, O.—The Service Board will advertise for bids for the construction of twelve miles of sanitary sewers and laterals in District No. 3, North Dayton, to be connected with storm and sanitary sewers. A pumping station will be installed when the sewer is completed, the outlet will require a 12-inch main, laterals 8 inches; the Superintendent of Sewers has been authorized to rent a Stewart sewer cleaning machine, at a rental of \$4 per day.—Robert Kline, City Engineer.

Springfield, O.—The Sinking Fund Trustees have disposed of \$14,743.85 sewer bonds to the Citizens' National Bank.

Bids will be received, September 10, for the purchase of \$24,041.50 5 per cent. sewer bonds.—L. M. Harris, City Clerk.

Youngstown, O.—Mr. Muller, Clerk, was instructed to advertise for bids for the trunk sewer and sewage plant.

Butler, Pa.—Council has decided to place a storm sewer on Short street; street lights will be placed on several streets.

Green Bay, Wis.—Plans designated as 1, 2 and 3 have been filed for the construction of reinforced concrete sewers in excess of 24 inches diameter.

WATER SUPPLY

Woodland, Cal.—The Woodland Gas and Electric Company will bore a 14-inch well 100 feet or deeper to secure a good supply of water for the city to replace two 8-inch wells which were rendered unfit for use by the seepage of oil from the company's plant.

Nampa, Ida.—The question of issuing \$30,000 paving and \$6,000 water works bonds will be submitted to a vote of the people September 10.—Address City Clerk.

Georgetown, Ind.—The citizens of this place, ten miles northwest of Louisville, have formed a company for the purpose of establishing a water works and electric light plant in the near future.—Address City Clerk.

Ardmore, I. T.—Bonds, \$30,000, will be issued for repair of the water dam and constructing pumping station.

Fairburn, Ill.—Council has voted \$3,000 bonds for water works purposes.

Rockford, Ill.—Council proposes to extend water mains in certain streets.

Concordia, Kan.—Plans and specifications are being prepared for the remodeling of the water works by Burns & McDonnell, Kansas City, Mo., Engineers.

Lawrenceburg, Ky.—The matter of issuing \$10,000 water works extension bonds is under consideration.—Address City Clerk.

Paducah, Ky.—The city will let contracts for about fourteen meters of 6-inch laterals for sanitary sewers.—L. A. Washington, City Engineer.

Waltham, Mass.—The Aberthaw Construction Company is doing the work preliminary to the installation of the new water works; the pump, with a capacity of 5,000,000 gallons per day, will be erected at the new source of water supply by the Platt Iron Works Co., of Dayton, O.

Beaver City, Neb.—The citizens have voted bonds for constructing water system.—Address City Clerk.

Haddon Heights, N. J.—The United Water Company proposes to furnish plugs at \$17.50 each, with 40-foot pressure guarantee, or forfeit \$5 per day for failure; furnish the borough free of charge for sprinkling each day 5,000 gallons from June 15 to September 15, and guarantee not to increase rates during the contract; improvements must be made in the system.—B. A. Lippincott, Mayor.

Jersey City, N. J.—The Street and Water Board has rejected proposals for a 15-inch pipe in Oxford avenue, as it was decided that a sewer of larger dimensions should be laid; specifications were adopted for new water pipe on Henderson street and for the completion of the Jackson avenue outlet sewer.

Long Branch, N. J.—The Long Branch Sewer Company will extend its mains to upper Bath and Norwood avenues.

Passaic, N. J.—Thousands of names have been signed to petitions for a municipal water plant, and an active campaign will be waged until election.—Samuel Huehman, Chairman, Petition Committee.

Peekskill, N. Y.—The Legislature has authorized the city to construct, control and operate a complete water supply system; the work will be under the supervision of the Board of Water Commissioners; estimated cost, \$200,000.

Rutherfordton, N. C.—Council proposes to issue bonds for the construction of water works.

Akron, O.—An ordinance has been passed authorizing issue of \$14,000 bonds to pay for the city's part of the expense of constructing filter beds.—Address City Clerk.

Dayton, O.—The Service Board has ordered the Water Works Department to install a fire hydrant at the city workhouse.—Robert Kline, City Engineer.

Elmore, O.—A water works system will be installed; estimated cost, \$25,000.—E. Jaeger, City Clerk; George Harrop, South Bend, Ind., Engineer.

Findlay, O.—Hayden & Miller, Cleveland, have purchased \$25,000 water works bonds, including accrued interest, for \$422.75 premium.

Oklahoma City, Okla.—The establishment of a meter system is under consideration.—Dine A. Johnston, Superintendent of Water Works.

Pawnee, Okla.—The water works system will be extended; the work will include laying pipe, constructing wells and adding to the height of present standpipe; cost, \$20,000.—M. H. Bretz, City Clerk.

Altoona, Pa.—The Council Committee on Water has approved water main ordinances for various streets, and laying service pipe connections from water mains to the inside of the curb.

Lewiston, Pa.—The Reedsville Water Company is preparing to construct a reservoir, with 1,000,000 gallons capacity; it will be 150 feet long and 80 feet wide; the stone walls will be brick lined with stone bottom.

Dickson, Tenn.—An election will be held, September 5, to vote on the question of issuing \$25,000 water works bonds.—Address Clerk, Board of Public Works.

Newport, Tenn.—An election will be held, September 14, to vote on the question of issuing \$37,500 water works and \$7,500 electric light bonds.—Address City Clerk.

Dallas, Tex.—Council has received bids on six-inch iron pipe as follows: Builders' Supply Company, Dimmick pipe, Birmingham, ton, \$41.65; American Cast Iron Pipe Company, \$39.90; Sheffield Cast Iron Pipe and Foundry Company, \$40; United States Cast Iron Pipe and Foundry Company, \$39.40.

Salt Lake City, Utah.—An ordinance has been passed for the new water main extension to the new subdivision east of the city.

The State Board of Land Commissioners has under consideration the proposition of sinking wells in Tooele County, and in Cedar Valley and Juab County, Dog Valley, in order to supply the farmers with water for domestic purposes.—Address Commissioners.

Milan, Wash.—An election will be held, September 10, to decide the question of issuing \$30,000 bonds for water system.—Address City Clerk.

Seattle, Wash.—Salt water mains will be installed as soon as possible; estimated cost, \$40,000.—R. H. Thompson, City Engineer.

Manitowoc, Wis.—A special election will be held, September 24, to vote on the question of purchasing the Manitowoc Water Company's plant.

Hamilton, Ont., Can.—The Fire, Water and Light Commission has decided to install two electrical pumps at the civic water works plant to pump 10,000,000 gallons daily; estimated cost, \$50,000.

LIGHTING AND ELECTRICITY

Alameda, Cal.—An effort is being made to induce property owners to place electroliners on both sides of San Pablo avenue.

Canton, Ga.—An election will be held, September 21, to decide the question of issuing \$29,000 bonds for light and water plant.

Millen, Ga.—The city will vote on the question of issuing \$30,000 light and water bonds.

Chandlerville, Ill.—A twenty-year franchise sought by F. P. Sheaf and others, empowering the installation of an electric light, heat and power system in the village, was granted at a special meeting.

Georgetown, Ind.—A private company has petitioned Council for a franchise to establish an electric light plant.

Plymouth, Ind.—C. D. Snoeberger, President of the Portsmouth electric light plant, contemplates making improvements to the plant at a cost of about \$10,000; day service will be established, if the city will extend his franchise and contract.

Ellsworth, Me.—The Ellsworth Power Supply Company has been incorporated at this place for the purpose of making and generating electricity for manufacturing purposes with a capital stock of \$450,000.—Henry M. Hall, of this city, is President and Treasurer.

Ashburnham, Mass.—The Town Board has under consideration the establishment of a municipal lighting plant.

Marlboro, Mass.—The Marlboro Electric Company has been granted permission to issue \$170,000 additional capital stock for improvements to its plant.—L. P. Howe, Manager.

Coleraine, Minn.—Frank McCormack has been awarded the contract for electric lighting.

St. Louis, Mo.—The Board of Public Improvements has approved plans for a new municipal lighting and heating plant at the Quarantine Hospital; to cost about \$10,000; a heating plant is also to be installed at the greenhouses in Forest Park.

Omaha, Neb.—The proposition to issue \$3,500,000 bonds for the purchase of gas plant will be submitted to the voters at the fall election.—Address City Clerk.

Long Branch, N. J.—Council has awarded the contract for lighting the city and bluff walk for ten years to the Consolidated Gas Company, at \$18,770.25 per year; the city is now paying the company \$20,933.37.—H. C. Abel, General Manager.

Newark, N. Y.—The Legislature has authorized an appropriation of \$3,500 for electric light, dynamo and engine at the New York State Custodial Asylum for Feeble Minded Women, at Newark.—C. W. Winspear, Superintendent.

Rochester, N. Y.—Specifications for the electric lighting system, which is to be installed by the County in the basement of the Court House, are being completed in the County Engineer's office; it is estimated that the plant will not cost less than \$7,000, and that it will be in working order in about 60 days after contracts are awarded; bids will be advertised for as soon as the specifications are ready; there will be two engines, one of 100 horsepower, attached to a 75-kilowatt generator, and one 75 horsepower, attached to a 50-kilowatt generator.

Fargo, N. D.—George Hancock, Architect, has completed plans for extending and remodeling the power plant of the Union Light, Heat and Power Company; the improvements will cost \$30,000.

Harrison, O.—The Harrison Electric and Water Company has incorporated, with a capital of \$30,000, by Wm. F. Boyd, Samuel L. Fairland, and others.

Cherokee, Okla.—The Cherokee Light, Ice and Power Company has been incorporated, with a capital stock of \$50,000, by E. T. Carpenter, J. W. Howard, and others.

Allegheny, Pa.—Council has under consideration the matter of issuing \$75,000 bonds for extending Braddock street lighting plant.

Altoona, Pa.—The Committee on Police and City Property has approved ordinances for electric lights on various streets, and the erection of a fire engine house.

Duquesne, Pa.—The Duquesne Light Company is arranging to issue \$10,000,000 bonds for general improvements and new equipment.—Address Secretary.

Pittsburg, Pa.—L. J. Regan is President of the Southern Electric Manufacturing Company, incorporated with a capital stock of \$65,000.

Park City, Tenn.—Council has passed an ordinance to light the city with twenty electric lights; the contract will be awarded to the Knoxville Railway and Light Company.

Cashmere, Wash.—Bids will be received, September 10, for the purchase of \$13,200 6 per cent., 20-year lighting bonds.—J. A. Amos, Town Clerk.

Croville, Wash.—The Sililkameen Power Company, of Croville, has been incorporated, with a capital stock of \$1,200,000, by Monroe Hartman, Chas. A. Andrus, H. W. H. Johnson, and a number of others.

Eau Claire, Wis.—The Chippewa Valley Railway, Light and Power Company has filed a mortgage for \$2,000,000 to the Harrison Trust and Savings Bank, of Chicago, which will enable the company to carry on its large interests and acquire more property; it owns the local electric railway line, power sites for dams in Dunn, Washburn and Barron counties, electric lines to and at Chippewa Falls, and has under way a line to Menominee.

Green Bay, Wis.—Council has rejected the

bids of the Green Bay Gas and Electric Company, for lighting the streets and public buildings, on the ground that they were too high, and wants bids on a five and ten-year contract for both 2,000 and 1,200 candle-power lamps on a moonlight and an all-night schedule.

Madison, Wis.—The Madison Gas and Electric Company will spend \$75,000 on the improvement of their plant; a turbine engine, condensers, and other necessary accessories will be installed.

Milwaukee, Wis.—Allard J. Smith and E. B. Pares, of Milwaukee, are trying to get a company to take over the old Lurvey mill, a mile and a half south of Dousman, for a power plant which is to furnish electric current to Dousman, the Masonic Home, and other points in that vicinity.

Muscoda, Wis.—An election will be held to decide the question of issuing bonds for electric light plant.

FIRE EQUIPMENT

Columbus, Ala.—A. H. Knott, representing the Gamewell fire alarm system, is preparing to install a new fire alarm system.

Newport, Del.—The Newport Fire Company will erect a new engine house at James street, above Market, in the near future, to cost about \$4,000.

South Bend, Ind.—The Board of Public Works has accepted plans for the erection of two engine houses.—Address, President of the Board of Public Works.

Opelousas, La.—The Louisiana Fire Prevention Bureau recommends a partially paid Fire Department, with electric alarm system, a second main connecting the water tower, larger pumps at the power house and more boilers, in order that the city may be re-rated and placed in class 2, with decrease of 8 per cent. insurance.

Springfield, Mass.—The Board of Aldermen has appropriated \$1,500 for fire protection and water facilities for the new plant of the Page-Storms Drop Forge Company.

Gilead, Neb.—A disastrous fire occurred recently; as the town is without fire protection, the question is being agitated.

Maplewood, N. J.—The Maplewood Hose Company has decided to erect a new fire house.—Address Chief.

Elreno, Okla.—The citizens in the Capital Hill district have petitioned for new fire house and additional apparatus.—Address Fire Chief.

Portland, Ore.—The Fire Chief recommends additional fire protection for the Piedmont suburb.—Address Fire Chief.

Harrisburg, Pa.—Council will receive bids for building hose house in the East End.—Address Fire Chief.

Wall, Pa.—A volunteer Fire Department has been organized and the Borough Council will purchase 1,500 feet of hose, and also two hose carts for the use of the new department.—Dr. A. A. Parks, Chief.

American Fork, Utah.—A volunteer fire brigade is to be organized and apparatus purchased.—Mayor Gardner and Councilmen Thornton and Rowley, Committee.

Columbia, Wash.—Council proposes to purchase combination chemical and hose wagon.—Address Fire Chief.

PUBLIC BUILDINGS

Bisbee, Ariz.—The citizens have voted \$18,000 bonds for enlarging the school house.—Address City Clerk.

Chicago, Ill.—Holabird and Roche, Architects, 100 Jackson boulevard, are preparing plans and will be ready for figures September 1, for the City Hall building, at Randolph, La Salle and Washington streets; it will be eleven stories high; estimated cost, \$4,500,000.—J. J. Badenoch, Chairman of Committee.

Antlers, I. T.—Bonds, \$3,000, have been voted for the erection of school house.—Address Clerk of the Board.

Ardmore, I. T.—Bonds, \$65,000, will be issued for the construction of a new high school building, installing plumbing and heating apparatus in present school property.

Springfield, Mass.—The Board of Aldermen has authorized the City Treasurer to borrow money for the city stables, addition to the Fairview school house, and repairs on City Hall.

Menominee, Mich.—The County Board is arranging to sell \$20,000 bonds for the erection of agricultural school.

Eupora, Miss.—Bonds, \$10,000, have been voted for the erection of school house.—Address Clerk of the Board.

Leadwood, Mo.—The citizens have voted \$25,000 4 per cent. school bonds.—Address City Clerk.

Atlantic City, N. J.—An election will be held to decide the question of issuing \$70,000 bonds for the construction of hospital.—Address City Clerk.

Rahway, N. J.—Common Council has appropriated \$10,000 for the support of public schools.

Utica, N. Y.—The County Board has authorized an issue of \$55,000 bonds for the completion of Court House.—Address County Auditor.

Mt. Airy, N. C.—An election will be held, September 13, to vote on the question of issuing \$15,000 bonds for the erection of school house.—Address Clerk of the Board.

Raleigh, N. C.—The people will vote in September on the issue of \$100,000 bonds for the new City Hall and auditorium building, and for another market.

Washington, N. C.—An election will be held to vote on the question of issuing \$25,000 Court House bonds.—Address County Auditor.

West Union, O.—Sealed bids will be received until September 15 by A. S. Wamsley, Clerk of the Board of Education of Rome, special school district, for \$100 bonds; interest at 6 per cent. per annum, payable annually on the 15th day of September, 1908, and each year thereafter.

Vanderbilt, Pa.—The citizens have voted \$6,000 bonds for the erection of school house.—Address Clerk of the Board.

Hartsville, S. C.—Bids will be received, September 20, for the purchase of \$25,000 5 per cent., 20-year school bonds.—S. M. McKinnon, Chairman.

Chattanooga, Tenn.—Plans for the new City Hall are about complete, and will soon be invited to be opened in thirty days by Councilman V. E. GeGeorgis, Chairman of the Joint Committee.—R. H. Hunt, Architect.

Waco, Tex.—The Attorney-General has approved an issue of \$50,000 school bonds.—Address Clerk of the Board.

Wenatchee, Wash.—A special election will be held, September 7, to vote on issue of \$25,000 bonds for building city jail and fire hall.—Address City Clerk.

STREET RAILWAYS

Pasadena, Cal.—Council has ordered that a franchise for double track service on the business streets in the center of town be granted, and the city clerk was directed to advertise the same for sale.

Augusta, Ga.—James U. Jackson, of Edgefield, is organizing a company to build an electric line from Augusta to Edgefield.

Brunswick, Ga.—The city and Suburban Railway Company has been incorporated to construct a new line four miles in length.—F. D. M. Strachan and Frank D. Allen, Incorporators.

Morris, Ill.—The electric line from Chicago to Morris and from Yorkville to Morris is now an assured fact, a bond issue of \$2,000,000 having been made by the Chicago Title and Trust Company to the Illinois and Fox River Central Railway Company.

Covington, Ind.—The Covington & Wabash Valley Railroad Company has been incorporated in the office of the Secretary of State with capital stock of \$50,000, the purpose being to build a railroad from Covington to Silverwood, a distance of about thirteen miles; the directors are William G. Ruhl, 302 Magnolia avenue, Chicago; Charles Walter Leinbach, William E. Banebrake, William G. Miles, George A. Murphy, Charles H. Dochtermann and George P. Schwinn, all of Covington.

Ft. Wayne, Ind.—The Ft. Wayne & South Bend Railway Company will issue \$2,500,000 bonds for improvements and extensions.

H. L. Weber, Chief Engineer of the Fort Wayne & Wabash Valley Traction Company, submitted plans for track elevation and they were taken under discussion by Mayor W. J. Hosey, members of the Board of Public Works, City Engineer Frank Randall, President W. V. Schwier and J. H. Welch, of the City Council; provision is made in the plans for either a single span or a support in the center and the whole matter was being carefully gone over in detail by the officials; no estimates were submitted, but this will be taken up as soon as the city can provide for the payment of its share of the cost.

Paducah, Ky.—An application will be made by the Southern Electric Railroad for a franchise to enter Paducah; this railroad to be built in Western Kentucky, connecting all the small towns.

Boston, Mass.—A petition from the directors of the Boston, Waltham & Western Electric Railroad Company has been received by the Railroad Commission, asking the Board to issue a certificate that the public necessity and convenience require the construction of an electric line to connect the cities of Waltham and Marlborough and the towns of Wayland, Sudbury and Maynard.

Traverse City, Mich.—Council has granted a franchise for 60 years to the Carter Construction Company to build a street railway line in this city.

Hattiesburg, Miss.—There has been formed here a merger of the street railway, electric lighting, gas and electric power interests of the city with a half-million dollar

capital, the immediate purpose being to complete the unfinished street railway system and to put in an entirely new electric and power plant.

Laurel, Miss.—The Gulf States Investment Company has been granted a franchise to construct and operate a street railway.

Albion, N. Y.—A company has been organized to build a trolley line from Batavia through Barre and Albion to Oak Orchard Harbor; the proposed road will be 27 miles long; Charles E. Hart, of Albion, is the president.

Babylon, N. Y.—The South Shore Traction Company is preparing to extend its lines.

Brookings, S. D.—The Brookings & Sioux Falls Electric Railway Company has sold \$50,000 in stock for constructing purposes; work on the road will begin September 15.

Chattanooga, Tenn.—The Chattanooga Railway Company proposes to expend \$45,000 in extensions and improvements.—D. J. Dunkin, General Manager.

Hammond, Tenn.—The Hammond Belt Railway Company has made a bond issue of \$75,000 for 20 years at 5 per cent.

San Angelo, Tex.—Franchise has been granted to J. H. Ransom, of Hereford, Tex., to construct and operate an electric line twenty-five miles in length.—J. A. Williams, Secretary and Treasurer.

BRIDGES

Los Angeles, Cal.—The Finance Committee recommends that the city spend \$175,000 for bridges, which will mean the reconstruction of the Seventh street bridge and the Arroyo de Los Posos bridge, the repairing of the Main street bridge and a beginning of the construction of the Downey avenue bridge.

Colorado Springs, Col.—Council has authorized the sale of the Kiowa street bridge to the County Commissioners for \$800.

Washington, D. C.—The Chief Engineer, U. S. Army, asks \$16,000 for the year ending June 30, 1909, for the care, maintenance and repairing of the new Highway bridge across the Potomac river, and includes the salaries of two draw operators at \$1,080 each, one draw operator at \$720, four watchmen at \$600 each, for labor \$1,500, and for power, lighting and miscellaneous supplies, and expenses of every kind necessarily incident to the operation and maintenance of the bridge and approaches, \$9,220.—Jay J. Morrow, Engineer Commissioner.

Athens, Ga.—The Commission has decided to erect twelve iron bridges over the small streams in this country; they will erect no more wooden bridges, but will gradually substitute steel bridges for all that are now in Clarke County.

Columbus, Ga.—The question of issuing \$75,000 bonds, for constructing a steel or a concrete bridge at Dillingham street, will be submitted to a vote of the people.—M. M. Moore, Clerk of Council.

Belvidere, Ill.—Council proposes to replace the Main street bridge at once.

Rock Island, Ill.—The Rock Island County Board is agitating the question of building a bridge across the Rock River at some point between the Moline bridge and Osborne.

Mt. Carmel, Ind.—The Cleveland, Cincinnati, Chicago & St. Louis Railway and the Southern Railway contemplate a joint bridge for the accommodation of the two roads at Mt. Carmel.

Richmond, Ind.—The Deep Gorge of the Whitewater river, which already is spanned by four bridges, two used by railroads and the other two built by the County, is to have another structure built across it; tentative plans have been agreed upon by the Board of County Commissioners, and barring the bridges that cross the Ohio river the new structure will be the longest in Indiana; its height will be 106 feet above the water line, and its total length, including approaches, will be approximately 900 feet.

Vevay, Ind.—The specifications are not yet completed for the new Plum creek bridge; the popular idea is for a 100-foot bridge with 28-foot files on each side, bridge to be four feet higher than the present structure and to have concrete floor.

Cedar Rapids, Ia.—The citizens will vote on the question of issuing bonds for the erection of bridge at Fourteenth avenue.

Cedar Rapids, Ia.—Council has directed the City Engineer to prepare plans and specifications for the construction of concrete-steel arch bridges at F. avenue and Third avenue; estimated cost, \$84,000.

Council Bluffs, Ia.—The Board of Aldermen has received bids on concrete bridges to be erected over Indian creek on Frank street and Eighth street, from E. A. Wickham, the Marsh Bridge Company, of Des Moines, and N. W. Stark & Co., of Des Moines; the first of these was for \$10,980 for each bridge and \$21,500 for both bridges; the second

ranged from \$9,380 to \$11,300, and the third from \$5,050 to \$5,527.

Detroit, Mich.—Council may ask the legislature to increase the city's bond limit to provide funds for the construction of a new Belle Isle bridge or the improvement of the present structure; Council has adopted a resolution petitioning the Governor to include in his call for the special session the new bridge proposition, which is to cost about \$1,000,000.

Escanaba, Mich.—The City Engineer recommends the reconstruction of three small bridges across Butchers creek, which were destroyed by flood.

Ypsilanti, Mich.—Council has ordered plans to be prepared for building a bridge over Harriet street.

Hamilton, O.—A bridge will be built by the County Commissioners in conjunction with the Cincinnati & Northern Traction Company over Two Mile creek on the Seven Mile pike and another above Middletown.

Pendleton, Ore.—Council and the County Board propose to build a joint city and county bridge at Lee street, at a cost of \$20,000.—R. W. Fletcher, County Commissioner.

York, Pa.—It is estimated that the repairs to the College avenue bridge will cost about \$10,000; the County officials have been informed that new abutments will have to be built, many of the iron girders replaced, and new flooring laid.

Pawtucket, R. I.—The North Main street bridge has been declared unsafe, and the Commissioner of Public Works has been directed to confer with the authorities of Central Falls about rebuilding the structure.—Mayor Kenyon.

MISCELLANEOUS

Alameda, Cal.—Preparations are being made to issue bonds in the sum of \$305,000 to pay for various city improvements; the projects under foot are: park and playgrounds, \$125,000; Webster street improvements, \$37,000; fire apparatus and fire houses, \$25,000; electric plant building and other plant improvements, \$50,000; Bay Farm Island road, \$13,000; library improvements, \$50,000; new school house, \$50,000; other municipal improvements proposed are a tunnel under the estuary, the purchase of the Dunne tract for a park, the remodeling of the Terrace Gardens by the Surf Beach Company recently incorporated, and the construction of an up-to-date pavilion.

Canton, Ga.—An election will be held, September 21, to vote on the question of issuing \$29,000 bonds for constructing sewerage and electric light system.—Address City Clerk.

Joliet, Ill.—Council has arranged to issue \$35,000 improvement bonds.—Address City Clerk.

Duluth, Minn.—The West Duluth Commercial Club recommends municipal improvements be made by the provision of a sewerage outlet for the main trunk sewers of West Duluth, the securing of children's playgrounds in different sections of West Duluth, the paving of Ramsey and Oneota streets and the beautifying of Central avenue by removal of wooden telephone, electric light and street railway poles.

East Orange, N. J.—The \$45,000 bonds issued for the purchase of the oval to be used as a public playground have been sold to the estate of Aaron Peck; the interest, with the amount paid for the ground, will make the cost of the oval \$117,000.

Newark, N. J.—Chief Engineer Morris R. Sherrerd has been instructed by the Board of Works to put the public bath houses in a more sanitary condition; the estimated cost is \$5,000; new showers and new plumbing will be installed.

The Board of Works will advertise for bids for a five-year contract for the collection of city garbage; a separate bid will be received for the collection of waste paper.—M. R. Sherrerd, Chief Engineer.

Trenton, N. J.—An ordinance is before Council authorizing an issue of \$47,000 10-year 4 per cent. bonds.—F. W. Gnichtel, Mayor.

Rensselaer, N. Y.—At the November election the question of issuing \$30,000 improvement bonds will be submitted to a vote of the people.—Address City Clerk.

Fostoria, O.—Bids will be received by the City Auditor, September 14, for the purchase of \$67,221.38 improvement bonds; interest at 4 per cent. per annum, payable semi-annually.

Hamilton, O.—A resolution has been adopted declaring it necessary to improve Eaton avenue from Main street to the north corporation line by paving the roadway with sheet asphalt, vitrified brick or bitulithic or bituminous macadam; Cottage street will be paved from Third to Fourth streets, cost, \$1,832.50; also alley south of Ludlow street with cement, cost, \$480; other streets and alleys will also be improved by paving and sewers.

BIDS RECEIVED

Ensley, Ala.—has contracted with the Southern Bitulithic Company, of Nashville, Tenn., for 21,500 square yards of bitulithic.

Montgomery, Ala.—Council received two bids for paving Montgomery street, the Memphis Paving and Asphalt Company and the Southern Bitulithic Company; the contract was awarded the latter.

Camden, Ark.—The Pouney Paving & Construction Company, Helena, was awarded contract for constructing 15,000 feet of sewer.—Louis Brouerlein, Secretary, Sewer District No. 2.

Fayetteville, Ark.—Clinton W. Watson & Co., St. Louis, Mo., have been awarded contract for constructing sewers, at \$71.375.60, as follows: excavation, under 4 feet, 15 cents; 4 to 6 feet, 22 cents; 6 to 8 feet, 28 cents; over 8 feet, 45 cents; rock, \$2.50; lineal foot macadam, 14 cents; vitrified pipe, 8-inch, 22 cents; 10-inch, 29 cents; 12-inch, 44 cents; 15-inch, 60 cents; 18-inch, 90 cents; cast-iron pipe, 8-inch, \$1.10; 10-inch, \$1.40; 12-inch, \$2; 16-inch, \$3; 6-inch pipe on 8-inch, 65 cents; on 10-inch, \$1; on 12-inch, \$1.50; manholes, \$32; extra for manholes, \$4 per foot; flush tanks, \$70; lamp holes, \$10; extra concrete, \$7; septic tank, \$3,000; filter, \$1,500; excavation for tank and filters, at 50 cents per cubic yard; special bridge, \$200; others bids were: McIlroy, Reese & Co., Fayetteville, \$83,749.88; Wm. F. Hall, Clinton, Mo., \$74,469.40; J. O. Leverens, Guthrie, Okla., \$74,699.38.—Burns & McDonnell, Kansas City, Mo., Engineers.

Pasadena, Cal.—Five bids have been received by Council for supplying the Police Department with two motorcycles; Wm. J. Wegner, 1220 E. Colorado street, would supply Racycle motorcycles for \$450; speedometer and odometer \$20 to \$50 extra; Bullock's of Los Angeles, ask \$250 each, Jones speedometer included; Park Cycle Co., Pasadena, offered two Model A, Reading Standard machines, for \$476, speedometers from \$40 to \$60 each; Margadant Bros., of Pasadena, two Indian motorcycles for \$450, equipped with speedometers; Pasadena Sporting Goods Co., two Racycle motorcycles for \$450, speedometers \$50 extra.

Council has awarded contract for work on Henrietta Court to Thompson & Dortonville, at their bid of \$1,512.05; the contract for work on California street was given to J. E. Haddock for \$18,326; A. W. McDowell was the only bidder for the oiling of St. John street, Congress street and Congress place, at 69 cents per lineal foot for the first-named streets and 67½ cents per lineal foot for Congress place; Council decided to reject the bid and readvertise.

San Jose, Cal.—Council has awarded to S. F. Bennett contract to put in sidewalks, curbing and gutters, culverts and roadway on Twelfth street; the redwood sidewalk will cost 7 cents a foot, the curb and gutter 25½ cents; culverts 47 cents and grading and rock at 11½ cents a square foot, and to Mathias Winkelbach contract for work on Whitney street, curb and gutters, 22½ cents; culverts, 35 cents; roadway, full width, 80 cents; sidewalk, 5 cents.

Waterbury, Conn.—Authority has been granted by the Board of Aldermen to purchase nineteen voting machines, at a cost of \$600 each.

Collinsville, Ill.—Johnson & Co. have been awarded contracts for sewer, at \$18,831, as follows: excavations to 8 feet, 35 cents; 8 to 12 feet, 75 cents; 12 to 16 feet, \$1.10; vitrified pipe, 8-inch, 21½ cents; 10-inch, 26½ cents; 12-inch, 32½ cents; Y connections, 6-inch on 8-inch, 35 cents; on 10-inch, 47 cents; on 12-inch, 57 cents; 12-inch cast iron pipe, \$1.90; 10 manholes, \$57 each; 15 manholes, \$72.25 each; flush tanks, \$105.60; lamp holes, \$10; concrete, \$9.75; John Hamm, of Litchfield, bid \$20,700, and Stautz & Gass, Belleville, \$18,875.—Burns & McDonnell, Kansas City, Mo., Engineers.

Joliet, Ill.—The Board of Local Improvements has passed resolutions and estimates as follows: Franklin street water mains, cost, \$3,891.36; William Moran, Blackman avenue sewer, \$1,000; C. R. Spears, Chicago and Lime street sewer, \$400; Monahan Bros., Irving street water main, \$300.

Springfield, Ill.—The Capitol City Concrete Company has received contract for paving Walnut street with asphalt at \$1.90 per square yard for paving and 55 cents per lineal foot for combined curb and gutter.

South Bend, Ind.—The contract for the grading of the Murock line between the old Lake Shore roadbed and Laporte was let to J. Young, who is doing the grading between Hudson lake and Rolling Prairie; the contractor is given 90 days in which to complete the work, and as there are 45,000 yards of dirt to be removed in making the grade, he must remove 500 yards of dirt each day.

Hutchinson, Kan.—An additional contract for 5,543 square yards of bitulithic has been awarded to the Kansas Bitulithic Company, of Kansas City, Mo.

Wichita, Kan.—Council has awarded contract for paving Ninth street to the Cleveland Trinidad Paving Company, and for 500 feet of fire hose to the Chicago Fire Hose Company, at 80 cents a foot for Chieftain brand 2½-inch cotton, rubber-lined, fire hose.

Boxboro, Mass.—Four bids were received by the Highway Commission for building 4,500 feet of the State highway, and the contract was awarded to Charles E. Horne, of Milbury, at his bid of \$3,330.70; as but one bid was received on a section of about 3,800 feet in Barnstable, the Commission will advertise again for proposals.

Waltham, Mass.—The Platt Iron Works, of Dayton, O., have received the contract for the pump at the water works, at their bid of \$22,500; the other bidders were Allis-Chalmers Works, Milwaukee, and the Snow Pump Company, of Buffalo, N. Y.

Detroit, Mich.—Council has awarded contracts for work to be done on five city sewers to J. A. Mercier, at his bid, amounting to \$26,374.40.

Coleraine, Minn.—The contract for the sewer and water system has been awarded to A. G. Osman for \$130,000.

Independence, Mo.—An additional contract for 1,600 square yards of bitulithic has been awarded to the Kansas Bitulithic Company, of Kansas City, Mo.

Asbury Park, N. J.—A. B. Marsden & Co., Utica, N. Y., have been awarded contract for constructing sewers, at \$33,038.20, as follows: 1,360 feet terra-cotta pipe, 6 to 8 foot trench, ground water to be handled and gravel paving to be excavated and relaid, at 90 cents per lineal foot; 150 feet, 10-inch, 4 to 6-foot trench, 60 cents, and 2,475 feet in 6 to 8-foot trench, 75 cents; 13,631 feet, 8-inch, 4 to 6-foot trench, 50 cents; 17,927 feet, 6 to 8-foot trench, 60 cents; and 1,565 feet, 8 to 10-foot trench, 75 cents; 11,550 feet, 6-inch, 4 to 6-foot trench, 40 cents; 1,735 feet, 6 to 8-foot trench, 50 cents; Y branches at 25 foot intervals, both sides; thickness of shell standard; ordinary standard 5-foot lengths, except branches, 2 feet; 121 ordinary manholes, \$35; 11 flushing manholes, \$40; 156 lamp holes, \$5; all under 8 feet; 5 flush tanks, excluding flushing appliance and covers, \$40; and 9 others, \$45 each; 5-ton cast-iron pipe, at \$75 per ton; also 4,100 feet terra-cotta sewer, including 15 manholes, at \$6.750, and 1,200 feet, 12-inch wrought iron pipe, ocean outlet, at \$4,900; total on these propositions, viz.: Lake avenue main, ocean outlet pipe and west side sewers, \$45,448.20; there were ten other bidders.—Near & Rogers, City Engineers.

East Orange, N. J.—The Board of Education has awarded to Louis W. Butterfield contract for installing heating apparatus in the Nassau school, at his bid of \$488.

Newark, N. J.—A contract for 18,150 square yards of bitulithic has been awarded to the Standard Bitulithic Company, of New York City.

Rahway, N. J.—Council has awarded to the New York and New Jersey Telephone Company a five-year contract for furnishing Rahway with a police signal system; to cost the city \$165.60 per annum, payable quarterly; the Gamewell system would have cost about \$2,500.

Verona, N. J.—Plans and estimates have been prepared for water system to cost \$55,000, including 6 to 12-inch pipe, etc.; the cost of materials is estimated as follows: piping, \$33,514; fittings, \$1,167; valves and boxes, \$676, and hydrants, \$2,150; the cost of construction is put at \$15,896 for laying mains and \$430 for setting hydrants; the installing of supplementary hydrant valves, which would obviate the necessity of shutting off the water in case of damage to any hydrant, was also recommended; the cost of these is placed at \$1,806, making the total for the whole plant \$55,639; it is proposed to bond for \$60,000.—William A. Smith, Chairman, Water Committee, Borough Council.

Albany, N. Y.—Contracts for barge canal work, opened by the Superintendent of Public Works, have been awarded as follows: Contract No. 12—To Stewart, Kerbaugh, Shanley Co., 527 Fifth avenue, New York, for \$3,391,716; Contract No. 14—To Arthur W. Luce, 100 Broadway, New York, for \$2,935,763; Contract No. 35—To Gilmour-Horton-Allen Co., Sandy Hill, N. Y., for \$739,261.

Rochester, N. Y.—Whitmore, Rauter and Viemus are low bidders for paving Evergreen avenue and Atlantic avenue, as follows: Evergreen street, Jamestown brick or any other except Metropolitan block brick, \$13.001; Metropolitan brick, \$13.741; Metropolitan special, \$14.222. Atlantic avenue, Jamestown brick or any other except Metropolitan, \$10.491; Metropolitan block, \$13.741; Metropolitan special, \$4.222. Hagaman, Miller & Hagaman were low bidders on Bessemer block brick for Evergreen street, at \$12.744.50; Henry Schoenfeldt is low bidder for constructing concrete platform at the Public Market, at \$1,320.

Syracuse, N. Y.—James T. Dougherty, of New York, has been awarded contract for

furnishing apparatus for city laboratory, at \$161.25; Joseph A. Blaut was low bidder for furnishing locating apparatus for Prescott, Tompkins and Frazer schools, at \$837.70.

Utica, N. Y.—Council has awarded contracts to the Barber Asphalt Paving Company as follows: Belmont avenue, \$1,873.45; Salina street, \$2,076.97; Lansing street, from Third avenue to Mohawk street, \$9,518.85; John R. Baxter, Jr., was awarded contract for paving Jay street with Mack block at \$9,351.40.

Yonkers, N. Y.—George T. Kelly has been awarded contract to erect City Hall at \$310,785, his original bid, which was the lowest received.—Lansing Quick, Architect.

Fargo, N. D.—Council has awarded contracts as follows: paving portion of Front street, for \$15,045, and for constructing a water main on Fifteenth street, at \$618.10, to Contractor Kennedy; construction of sewer on Eleventh street, for \$538.04, G. W. Haggart; construction of water main on Tenth street, at \$1,146.65, and water main in the alley of block 6, at \$609.20, to C. H. Porritt.

Bellevue, O.—The contract for improving Castalia street was awarded to Lee and Griggs at \$5,982.02, and the contract for improvement of Euclid avenue to the Modern Construction Company.

Columbus, O.—N. B. Abbott was awarded the contract for the following streets with Nelsonville block: Hunter avenue, \$8,640.95; Fairwood avenue, \$19,926.50; Collins avenue, \$6,709.25; Ninth avenue, \$4,675.50; Highland street, \$9,024.40; D. E. Sullivan and Son were awarded the following: Ogden avenue, Gloucester block, \$10,535.50; Vineyard avenue, Athens block, \$13,554; the contract for paving Indianola street was awarded to the Buckeye Engineering and Construction Company.

Dayton, O.—The Service Board has awarded the Columbus Equipment Company the discarded boilers at the water works for \$500.

Dillonvale, O.—Rosser & Maloney, Bellaire, were awarded contract for 3,829 square yards brick, on 8-inch gravel foundation, at \$120; 2,850 yards, excavation, mostly County pipe, at 30 cents additional; also for resetting 2,059 lineal feet 5x20-inch old stone curb, at 8 cents, and setting 1,772 feet 6x24 new cement curb, at 44 cents; total, \$14,219 for paving and \$946.80 for cement curb, or \$1,212.62 for stone curb; Dixon & Pickett, Martins Ferry, \$14,262 for paving and \$1,218.97 for stone curb; Geo. B. Clifford, Martins Ferry, \$15,352 for paving, \$1,260.76 for stone curb; Freshwater Bros. & Co., Chester, W. Va., \$15,377 for paving and \$1,183.53 for cement or stone curb; no contract was awarded for constructing 1,560 square yards sidewalks for which Dixon & Pickett was low bidder, at \$280.80; Rosser & Maloney bid \$436.80 and Geo. B. Clifford \$468.—A. G. White, Village, Engineer.

Hamilton, O.—City Engineer Dillon has submitted to the Board of Public Service a tabulation of bids for the construction of a sewer on Market street; the engineer's estimate is \$19,460; the tabulation of bids was as follows: Frank J. Davis, \$17,552.20; W. H. Louthan, \$16,992; Thomas Bridges and Sons Co., \$16,504.80.

Lima, O.—The contract for resurfacing W. High street from Main to Elizabeth street was awarded to Frank Stone, of Lima, at \$3,168; the contract for the grading and sewerage of Fairview avenue was awarded to Jas. B. Lomison, at \$1,033.65.

Toledo, O.—Logan brick will be used to pave Phillips avenue; Carrigan Bros. secured the contract, at \$36,136.65.

Russell & Jennison have been awarded the contract for 24,500 yards of creosoted wood paving block.

A contract for 7,000 square yards of bitulithic has been awarded to H. P. Streicher & Co., of this city.

Wellston, O.—The contract for paving Pennsylvania avenue was awarded W. H. Ringwald, Chillicothe, at \$16,500.

Youngstown, O.—Bids were received by the County Commissioners for erecting the new tuberculosis addition to the Canfield Infirmary and addition to the Glenwood Children's Home. The bids received for the infirmary job are as follows: O. D. Williams, exclusive of plumbing and steam heat, \$5,840; Heller Brothers, entire work, \$5,793; Paul Messerly, without plumbing and heating, \$5,004; Jacobs-Rowland & Co., plumbing and heating only, \$737.10; L. B. Scheible, plumbing and heating, \$690.61; C. J. Little, plumbing and heating, \$744; W. J. Scholl, plumbing and heating, \$748; P. E. Layton, painting, glass and wood finish, \$664. The bids as received and will be rejected on the Glenwood Children's Home are: Heller Brothers, including plastering and basement ceiling, but less tile in lavatory, \$11,444; C. J. Little, plumbing and heating, gas and steam piping, \$1,097.80; L. B. Scheible, plumbing, gas and steam fitting, \$1,037.73.

Allentown, Pa.—The contract for the steam heating apparatus for the new school buildings at Fullerton and Egypt was awarded to Schick & Herman, of Catasauqua; the bidders and the amounts are as follows: Young & Rabenold, Egypt Building, \$3,715,

Fullerton, \$4,726.23; Schick & Herman, Egypt, \$3,030; Fullerton, \$4,425.50; Hersh & Brother, Egypt, \$3,450; Fullerton, \$4,450; Jacob Miller, Egypt, \$3,800; Fullerton, \$5,360.

Altoona, Pa.—Bruce Steel has been awarded contract for grading and improving the Gospel Hill park site, at 87 cents a cubic yard; the Street Commissioner will improve Prospect Hill park site, the bids received being too high. Isaac Bender was awarded contract for constructing the sewer in Eleventh street, between Twenty-fifth alley and Twenty-first avenue and Twenty-first street, etc., and Saupp & Drhew, for sewer in Twenty-first street and Fifth avenue to Fifth alley, and First avenue between Twelfth and Thirteenth streets. There were two bids received for doing grading on unimproved streets; they were from Anthony and Bruce Steel; both were rejected, and on motion of Mr. Andrews it was decided to readvertise.

Baden, Pa.—Thomas Sweeney Company, of Pittsburgh, was low bidder for constructing sanitary sewer system, at \$16,545, as follows: 1,200 feet 15-inch terra cotta pipe in 4-foot trench, no paving to be excavated and relaid, at 63 cents; 3,450 feet 12-inch pipe, 7½ foot trench, 60 cents; 13,950 feet 8-inch pipe, 7½ foot average depth, 47 cents average price; 25,000 feet brick sewer, \$3 per foot; wages of common labor, \$1.75 per day; other bidders were: Trefall & Girno, Pittsburgh, \$11,141; G. Waller & Co., Pittsburgh, \$13,908; Neelen & Daly, Allegheny, Pa., \$14,554.60; L. D. McCafferty, Pittsburgh, \$14,602.50; Geo. S. McFall, Beaver Falls, \$14,985; Ott Brothers, Pittsburgh, \$15,037; Geo. B. Clifford, Martins Ferry, \$15,312.50; The Penna. Contracting Co., Pittsburgh, \$16,237.50.—L. F. Northrop, Secretary, Council.

Philadelphia, Pa.—The contract for preliminary filters at the Torresdale filtration plant, Philadelphia, has been awarded to the Millard Construction Co., which is controlled by James P. McNichol, who, under the name of the D. J. McNichol Co., held several of the filtration contracts annulled some two years ago; the contract price is computed as \$1,156,411, or \$348 lower than the Mack Paving Co.; bids were invited on three different styles of device for controlling the rate of filtration, and of these three the city chose the highest priced one, in which Mr. McNichol came nearest to the bid of the Mack Co.; the city also submitted its own specifications for gauges, and permitted the contractor to put in an alternative bid on gauges to be furnished in accordance with his own specifications; the McNichol bid on gauges, according to the McNichol specification, was sufficiently lower than the similar Mack bid to overcome by \$348 the \$4,661 of excess price of the controllers of the McNichol bid.

Wilkes-Barre, Pa.—City Councils have awarded to Edward Healey contract for paving Main street with Mack brick; his bid was \$2.40 per square yard; new curbing, 42 cents; old curb, 15 cents; total, \$6,648.52; bids were also received from Fitzpatrick & McConville, at \$6,790.24, and Joseph Newcomb, at \$6,711.31.

York, Pa.—The Highway Committee has awarded contract for constructing the brick storm sewer on West Jackson street to John A. Raeyling, at \$4.25 per lineal foot.

Ogden, Utah.—P. J. Moran has been awarded contract for paving Mall avenue, from Twenty-fifth to Twenty-sixth street, for \$19,452.

Norfolk, Va.—The Coastwise Dredging Company has been awarded contract for dredging the channel from Ewall's Point to Norfolk to a depth of 30 feet at low tide; although \$1,000,000 was appropriated, the work will not cost more than \$600,000, and the next Congress may be asked to increase the depth to 35 feet.

Portsmouth, Va.—The Committee on Sewerage has awarded contract for material for the construction of the Fifth avenue sewer gas outlet as follows: Warwick Lumber Company, Suffolk, lumber; J. C. Grinnan, Norfolk, cement; M. J. Drummond Company, Norfolk, iron and terra-cotta pipe.

Chehalis, Wash.—Council has awarded a contract for the pavement of Market street, one of the main business streets, with vitrified brick, to P. E. McHugh, of Tacoma, for \$45,860; the next lowest bid was that of Ernest Lister for \$46,110 and Frank Keasal for \$46,500, both being Tacoma contractors; the bid went \$9,060 higher than the estimate of the city engineer, the discrepancy being accounted for by a difference in cost of securing sand and gravel, which will be shipped in by rail.

Olympia, Wash.—Bids for the construction of the new buildings for the State College at Pullman and for the normal schools at Cheney and Ellensburg and for plumbing work for the Steilacoom Asylum were opened by the Board of Control, as follows: Remodeling plumbing at Fort Steilacoom Hospital—W. B. Coffee Plumbing Company, Tacoma, \$7,331; T. H. Bellingham, Tacoma, \$8,107; A. M. Ogdard, Tacoma, \$7,850; Ben

Olson Company, \$8,499; all bids rejected. Training school at normal school, Cheney; the total appropriation for building, including plumbing, is \$65,000; bids were submitted on three sets of plans, the figures being: For building alone—Hastie and Dougan, Seattle, \$80,040; John T. Huettner, Spokane, \$86,715; M. C. Murphy, Spokane, \$86,000; Lance and Peters, Seattle, \$80,000; A. E. White, Seattle, \$79,842. For plumbing—W. B. Coffee Plumbing Company, Tacoma, \$4,504; James Smythe Plumbing Company, Spokane, \$4,950. Heating system Cheney normal, appropriation \$10,000—James Smythe Plumbing Company, Spokane, \$13,950; Inland Heating and Ventilating Company, Spokane, \$12,900. Ellensburg normal school, training school building, including plumbing and equipment, total appropriation \$65,000; building bids alone were: A. E. White, Seattle, \$75,400; Lance and Peters, Seattle, \$72,850; Jones and Woodman, Seattle, \$80,400; M. C. Murphy, Spokane, \$78,887; John T. Huettner, Spokane, \$81,201; Hastie and Dougan, Seattle, \$73,644. Plumbing—W. B. Coffee Plumbing Company, Tacoma, \$4,283; James Smythe Plumbing Company, Spokane, \$4,750. Heating system, Ellensburg normal, total appropriation \$10,000; bids: Seattle Heating and Plumbing Company, \$17,200; Rautman Plumbing and Heating Company, Seattle, \$18,850. Recitation building and equipment, Pullman, total appropriation \$125,000; bids on building, except heating—Hastie and Dougan, Seattle, \$110,947; D. C. Murphy, Spokane, \$113,963; Lance and Peters, Seattle, \$116,900. Heating for same bids—Arnold-Evans Company, Spokane, \$7,870; G. H. Sutherland Company, Walla Walla, \$7,560.—Architects, John K. Dow, of Spokane, for the Pullman work; Julius Zittel, of Spokane, for the normals, and John G. Proctor, of Tacoma, for the hospital work.

St. Boniface, Man., Can., has increased its yardage for bitulithic with Bitulithic & Contracting, Ltd., of Winnipeg, by 1,800 square yards.

Toronto, Ont., Can.—The Warren Bituminous Paving Company has been awarded a contract for 14,672 square yards of bitulithic.

Amherst, N. S.—5,600 square yards of bitulithic has been added to the contract previously awarded to the Warren Bituminous Paving Company, of Toronto, Ont.

INCORPORATIONS

Atlas Brick Company, New York, N. Y.; real estate; capital, \$100,000. Incorporators: James J. Martin, 538 Knickerbocker avenue, Brooklyn; William H. Cutler, Freeport, N. Y.; Franklin Henshaw, New York, and others.

Bay State Engine Company, Boston, Mass.; machinery business; capital, \$25,000. President, A. Schwartz, 31 Hancock street; Treasurer, A. Green, 1 Allen street; Clerk, A. Golden, 44 Stillman street, all of Boston.

Camp Hill Fuel and Gas Company, Camp Hill, Pa.; capital, \$5,000. Incorporators: Robert Smith, T. K. Van Dyke, and others.

Canadian Light and Power Company, El Reno, Okla.; capital, \$100,000. Incorporators: Henry Schaeffer, John Maney, R. B. Blake, all of El Reno, and others.

Chelan Electric Company, Wenatchee, Wash.; capital, \$500,000; to build an electric railway from Wenatchee to the western part of Washington. Incorporators: J. T. McChenney, President; E. C. Mony, Secretary, and others.

Davenport-Manchester Interurban Company, Davenport, Ia.; capital, \$15,000. Incorporators: President, George T. Baker; Vice-President, J. A. Voorhees; Secretary, F. W. Rank; Treasurer, T. F. Halligan. The directors of the company are L. Matthews, F. H. Miller and Henry Vollmer.

H. W. Dyer Company, New York, N. Y.; building and construction; capital, \$5,000. Incorporators: Harry W. Dyer, 107 East Twenty-seventh street; Almeron W. McCrea, The Ansonia, New York; Frederick K. Lester, 738 St. John's Place, Brooklyn.

Eastern Paving and Construction Company, Trenton, N. J.; to do a general contracting business; Agent, T. J. McGovern; capital stock, \$10,000. Incorporators: Charles H. Hickey, Vincent T. Coughlin and T. J. McGovern.

Egyptian Vault Company, New York, N. Y.; to build vaults, monuments, etc.; capital, \$50,000. Incorporators: Samuel B. Husselman, Worcester, Mass.; Bengt Nelson, 8 East Forty-second street; David L. Snediker, 63 Wall street, both of New York, and others.

Frontenac Gas Company; registered office, Jersey City; agent, Charles N. King; capital stock, \$10,000. Incorporators: C. N. Jelliffe, C. R. Bartlett and Edward Ostrom, Jr. The company is to do a gas, electric lighting, etc., business.

George Steam Turbine Company, Boston, Mass.; machinery business; capital, \$50,000. President, F. A. Keniston, Cambridge; Treasurer, G. Hidden, 54 Fourth street, Cambridge; Clerk, C. F. Richardson, 53 State street, Boston.

Lefferts Park Improvement Company, Brooklyn, N. Y.; builders' masons, etc.; cap-

ital, \$1,000. Incorporators: Achille Guglielmelli, 6718 Fifteenth avenue, Brooklyn; James A. Pall, 1315 Seventeenth street; Michael J. Grady, 6419 Fifteenth avenue, Brooklyn.

Little Mahoning Gas Company, Ridgway, Pa.; capital, \$100,000. Incorporators: M. M. Rankin, B. G. Kime, R. B. Thompson, J. C. Williams, C. H. Law, Ridgway; B. F. Thompson, Clarksburg, W. Va.; J. H. Rochester, Marion Center.

Manhattan Generator Company, New York, N. Y.; manufacture acetylene gas apparatus; capital, \$25,000. Incorporators: George G. Measures, 2100 Eighth avenue; Robert Connor, Ira E. Johnson, 31 Nassau street, New York.

New Jersey Reinforced Concrete Construction Company; to construct work of all kinds; agent, John J. Van Order; capital stock, \$125,000. Incorporators: John J. Van Order, William Shears and Clarence D. Dersmith.

New York Terminal Company, Jersey City, N. J.; to repair docks, and maritime rights; capital, \$10,000. Incorporators: Richard N. Young, 38 Wall street; James E. Tolfell, 26 East Forty-ninth street, both of New York; George W. Flaacke, as above.

People's Municipal Light and Power Company, Columbus, O.; capital, \$100,000. Incorporators: Samuel L. Davies, George Counter, T. W. McCue, and others.

Peterborough Realty Company, Plattsburg, N. Y.; deal in water rights, etc.; capital, \$48,000. Incorporators: John J. Cunningham, Sandy Hill, N. Y.; William J. McGaffrey, Thomas Gillmet, Hiram L. Wait, Plattsburgh, N. Y.

Prentice Light, Power and Water Company, Prentice, Wis.; capital, \$3,000. Incorporators: A. F. Zeigler, Henry E. Zeigler, and others.

Russellville and Ozark Mountain Traction, Light and Power Company, Pine Bluff, Ark.; to build and operate an electric interurban road between Russellville and other cities, and sell electrical energy. Incorporators: Adam J. Robinson, president; James Gould, secretary.

Southern Memphis Traction and Light Company, Memphis, Tenn.; to build and operate lines on several streets; capital, \$50,000.

Tri-City Gas Company, Gadsden, Ala.; capital, \$150,000; to supply gas to Gadsden, Alabama City and Artoia. Incorporators: Henry C. Higgins, of Dixon, Ill., and others.

Williamsburg Electric Light Company, Williamsburg, Whitley County, Ky.; capital, \$5,000. Incorporators: E. E. L. A., and Lida Nelson.

PATENT CLAIMS.

862,939. Process of Mixing with or Dissolving in Water and Distributing Material to Be Applied to Streets, Roads, or Railroads. Benjamin P. Richardson, Brookline, Mass. Serial No. 352,093.

The system of distributing materials upon roads, etc., consisting in maintaining several supply tanks near the hydrant, carting the materials to said tanks and forming a mixture or solution thereof, and afterward simultaneously diluting and delivering the same to a watering cart by conducting water from the hydrant through an ejector to said cart, the ejector automatically drawing from said tank the desired proportion of concentrated liquid.

862,952. Pneumatic Track-Sander. John H. Watters, Augusta, Ga. Serial No. 375,334.

In a pneumatic track sander, a casing having a nipple arranged for attachment to a sand box and provided with a pair of diametrically aligned discharge openings, and an air jet nozzle extending into the casing and provided with a jet opening at the end, and with a pair of openings at the side, the latter openings being diametrically opposite each other, and in alignment with the lateral discharge openings of the casing.

862,972. Device for Facilitating the Laying of Pipes. James F. Jones, Maquoketa, Ia. Serial No. 263,499.

The combination with a pipe section having a valved coupling at one end and a hose extending from the coupling to a source of water supply; of an attachment detachably connected to the other end of the pipe section and comprising a rearwardly tapering hollow head interiorly threaded, a point extending forward from said head and having a centrally disposed passage extending longitudinally from the apex of the point to the interior of the head, said head being formed with a chamber of less diameter than its threaded bore and disposed between the latter and the central passage, said chamber having an inclined bottom and converging tapering ribs radiating from the point and angular in cross section.

863,046. Prepayment Mechanism. Ernest Schattner, Schenectady, N. Y., assignor to General Electric Company, a Corporation of New York. Serial No. 275,568.

In combination, a movable coin-carrier, electromagnetic means for moving the carrier when energized, a circuit for energizing

said electromagnetic means, a pair of separated contacts in the circuit for energizing said electromagnetic means connected through a coin in said carrier when the carrier is in one position and contains a coin, and an auxiliary device controlled by the carrier for connecting said contacts when the carrier is in another position.

863,073. **Sewer-Cleaning Apparatus.** John F. Kuhlman, Hammond, Ind. Serial No. 307,801.

In combination, a sewer scraper curved on its lower side to fit the shape of the sewer and provided on its top with an upstanding handle adapted to contact with the top of the sewer and direct the scraper.

863,096. **Pavement.** Herman J. Ruffl, Mobile, Ala. Serial No. 357,029.

A pavement consisting of suitable layers of plastic compound, the lower layer of which is provided with an excess supply of oil adapted to feed and replenish the oil evaporated from the upper layer.

863,181. **Catch Basin.** Solon G. Howe, Detroit, Mich. Serial No. 333,069.

A catch basin provided with an inlet and outlet and with a trough therewithin arranged to overflow into the basin, and an additional outlet leading from the trough.

863,224. **Electric Meter.** George A. Sawin, Swampscott, Mass., assignor to General Electric Company, a Corporation of New York. Serial No. 351,359.

In an electric meter, in combination with a casing having a removable front cover, a removable plate forming a portion of the back of the casing, sealing pins extending through the meter and engaging both the front cover and back plate, and means independent of said pins for supporting the back plate on the casing.

863,305. **Night-Soil Reduction Plant.** Patrick E. McDonnell, Jr., Chicago, Ill. Serial No. 346,300.

A night-soil reduction plant consisting of a structure having a receiving chamber provided with doorways in its floor and doors for closing the same, a reservoir beneath said chamber and having a declivitous floor, a separating and discharge chamber located adjacent to the reservoir and a part thereof below the floor of the reservoir and having a declivitous floor, an outlet at the lower portion of said floor leading to a drain, a perforated separating cylinder rotatably mounted in the separating and discharge chamber and having communication at one of its ends with the reservoir, and means to rotate said cylinder, substantially as described.

TRADE NOTES

Asphalt.—The New York and Bermudez Asphalt Company has been fined by the Venezuela Court of First Instance in the sum of 24,000,000 bolivars (about \$5,000,000) on account of the alleged connection of the company with the so-called Matos rebellion. The judge also authorized other assessments of damages to be made against the company, such, for instance, as penalties for the loss of government revenue through the revolution.

Crane Controllers.—The Cutler-Hammer Manufacturing Company, Milwaukee, Wis., makers of electric controlling devices, has issued a booklet, pigeon-hole size, descriptive of its line of electric crane controllers. In addition to full descriptions and illustrations of five types of crane and hoist controllers, the booklet contains connection and dimension diagrams, repair part charts, prices, net weight and shipping weight of apparatus, etc. An improved form of controller for handling heavy currents is also described.

Gas Burned Brick.—The Carbough Brick Company, Fort Smith, Ark., recently conducted a test of brick burning by gas at a low pressure. A kiln of 200,000 bricks was burned with 1,974,700 cubic feet of gas, or 9,274 cubic feet per 1,000 bricks. The usual rate of consumption with high pressure gas is 28,000 cubic feet per 1,000 bricks. The cost for fuel was 62¾ cents per 1,000. According to the report, the bricks were burned evenly throughout, even at the ends of the kiln. The time of burning was eight days and three hours. Mr. J. A. Brahl, an engineer, had charge of the installation of pipe and the gas pressure reducer.

Voting Machines.—The United States Standard Voting Machine Company,

Rochester, N. Y., has placed on exhibition at the City Hall, Bridgeport, Conn., one of its voting machines, which may now be used in elections for State as well as city officials. The Standard machine is now said to be in use in 160 cities in New York State. In Rochester, with 162 voting precincts, the result of an election has been taken, tabulated and printed in newspapers within 25 minutes after the close of polls. The machines are rented for about \$2,000 each.

Water Meters.—The Hersey Manufacturing Company, South Boston, Mass., publishes a booklet which is distributed at the Jamestown Exposition. The publication contains a map of the Exposition grounds and a description of the local water supply. The 12-inch main which supplies the receiving reservoir from the city mains is equipped with a 12-inch Hersey Torrent meter. A cut of this meter and a brief popular description of its operation and the object accomplished by its use is also given.

Water Works Specialties.—The Water Works Equipment Company, 180 Broadway, New York, manufactures a number of water works specialties. Its improved sleeve and valve for tapping machines can be used with any tapping machine now in use. The Van Winkle tapping machine, which is manufactured in four sizes, will tap mains of from 4 to 48 inches in diameter. Any of these machines except the smallest may be equipped to operate with a gasoline engine. The Star Pipe Jointer does away with the necessity of using clay, a ring of packing reinforced with a pliable metallic band does the work. The Van Winkle Emergency Sleeve has machined faces with sheet lead gaskets intervening, making a joint that will stand high pressure.

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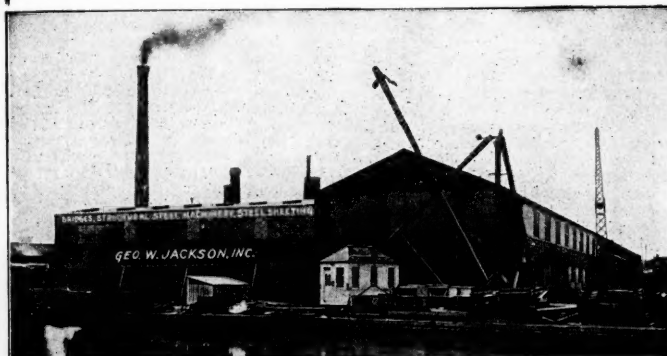
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